

Colville National Forest

Newport-Sullivan Lake Ranger Districts

LeClerc Creek Cattle Grazing Allotment EIS

Biological Evaluation/Management Indicator Species Report

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Written By:

Amea Rief

Prepared by: /s/ *Aimee Rief*

Fisheries Biologist

US Forest Service TEAMS Enterprise

Edited by:

Karen Honeycutt

Edited by: /s/ *Karen Honeycutt*

Fish Biologist

Colville National Forest

This document is prepared in conformance with the legal requirements set forth under section 7 of the Endangered Species Act of 1973 (19 U.S.C. 1536(c) as amended, 50 CFR 402, and standards established in Forest Service Manual direction (Section 2672.4 through 2672.42).

Table of Contents

INTRODUCTION.....	3
CONSULTATION TO DATE	4
CONSERVATION MEASURES.....	4
ISSUES TO BE ADDRESSED.....	4
MANAGEMENT DIRECTION	4
DESIRED FUTURE CONDITIONS, FOREST PLAN STANDARDS, APPLICABLE LAWS, REGULATION, POLICIES	5
AFFECTED ENVIRONMENT	6
ANALYSIS AREA AND TIMEFRAME	6
EXISTING CONDITION	8
POPULATION AND HABITAT INDICATORS	15
ENVIRONMENTAL BASELINE	15
POPULATION AND HABITAT INDICATORS (USFWS 1998).....	19
ENVIRONMENTAL CONSEQUENCES.....	26
ALTERNATIVE A NO CHANGE (CURRENT MANAGEMENT).....	26
ALTERNATIVE B NO ACTION (NO GRAZING)	28
ALTERNATIVE C	29
ALTERNATIVE D	35
MONITORING	38
FOREST PLAN CONSISTENCY	43
DETERMINATION AND SUMMARY	44
REFERENCES.....	44

LIST OF TABLES

TABLE 1. INFISH OBJECTIVES	5
TABLE 2. FS STREAM SURVEY DATA	10
TABLE 3. PEND OREILE PUD STREAM SURVEY DATA	11

LIST OF FIGURES

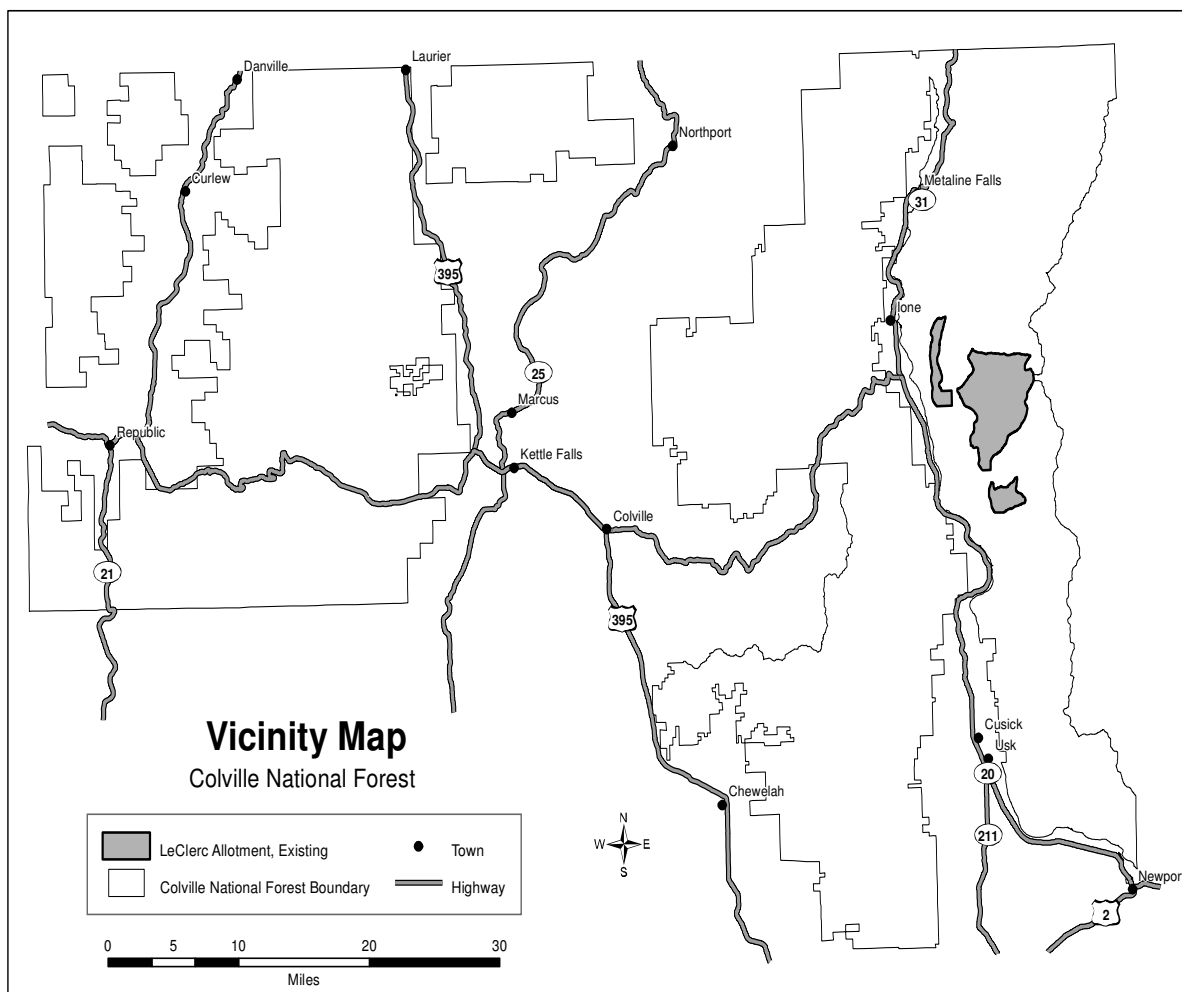
FIGURE 1. VICINITY MAP	3
FIGURE 2. LECLERC RANGE ALLOTMENT BOUNDARY and HUC 12 ANALYSIS AREAS	5
FIGURE 3. BULL TROUT CRITICAL HABITAT	13
FIGURE 4. CURRENT HABITAT SUITABILITY	15

Introduction

This Biological Evaluation (BE) and Management Indicator Species (MIS) Report is for the LeClerc Creek Cattle Grazing Allotment EIS project located on the Newport-Sullivan Lake Ranger District, Colville National Forest (CNF; Figure 1)

The CNF proposes to reissue the LeClerc Creek Cattle Grazing Allotment Permit. This analysis complies with Section 504 of the 1995 Rescissions Bill (P.L. 104-19). The Act requires that grazing permits, which expire prior to completion of National Environmental Policy Act (NEPA) analyses, be reissued based on existing terms and conditions. It also requires new permits be issued unless there are significant environmental concerns. The Colville National Forest has been initiating the NEPA process on allotments across the Forest based on a defined schedule. See Chapter 1 of the LeClerc EIS for a complete description and background of the proposed action.

Figure 1. Vicinity Map.



This BE/MIS covers bull trout (*Salvelinus confluentus*) and Westslope cutthroat trout (*Oncorhynchus clarki lewisi*). A biological assessment was completed for federally threatened Columbia River bull trout (*Salvelinus confluentus*) and federally designated critical habitat for bull trout for 4.9 miles on Middle Branch LeClerc Creek and 7.0 miles on West Branch LeClerc Creek (Sub-unit Lake Pend Oreille).

The LeClerc Creek grazing allotment is located in the Pend Oreille River watershed which is a tributary to the Columbia River (Figure 2). Dams prevent upstream passage of bull trout into the project area. Juvenile bull trout have been found at several locations in the east and west branches of LeClerc Creek. The spawning sites are not known. The project **may affect but is not likely to adversely affect** (NLAA) bull trout populations **and may affect, likely to adversely affect** (LAA) designated critical habitat due to continued cattle access into riparian areas and the placement of hardened cattle crossings.

Consultation to Date

The USFS and USFWS conducted a field review of portions of the allotment on October 15, 2012 and discussed the project on March 22, 2013.

Conservation Measures

Conservation measures listed in the *Programmatic Biological Opinion for Aquatic Restoration Activities in the States of Oregon, Washington and portions of California, Idaho and Nevada* (ARBO II 2013) will be followed for all project restoration activities.

Issues to be Addressed

The following are issues that came up during public and internal scoping:

- Restoration of both channel and riparian habitat is needed to provide for the recovery of bull trout, a listed species and the continued sustainability of the Westslope cutthroat trout, a sensitive species.
- Water quality and stream health must be maintained and/or enhanced to comply with the Inland Native Fish Strategy (INFISH) habitat guidelines, Washington Department of Ecology water quality standards, and the Endangered Species Act.

Measures to be analyzed by alternatives:

- Miles of designated critical habitat for bull trout accessible to livestock
- Miles of fish-bearing streams accessible to livestock
- Acres of wetlands accessible to livestock
- Number of hardened stream crossings for livestock
- Number of upland water sources needed (water troughs), and
- Adaptive management strategy in place?

Management Direction

Desired Future Conditions, Forest Plan Standards, applicable laws, regulation, policies

The desired future condition for the aquatic and riparian ecosystem contains two parts. First, stream and riparian conditions fully support fish populations under normal climatic conditions. Second, they are resilient when subjected to extreme climatic events and recover rapidly without irretrievable damage to beneficial uses. These conditions are maintained by ensuring the present and future supply of ecosystem structural elements that control: a) landscape water storage and slow release functions (i.e. wetlands, floodplains, vegetative cover); b) channel form and function (i.e. riparian vegetation for streambank stability and large woody debris) by preserving the full diversity and function of wetlands, floodplains and riparian vegetation.

Colville National Forest Land Management Plan (FP) general goals (FP p. 4-1 to 4-2) and the Inland Native Fish Strategy (INFISH p. A-1 to A-2) (US Forest Service 1995) include:

- Provide a diversity of high quality aquatic habitats which insures viable populations of fish in sufficient numbers to meet angler demands. INFISH sets the criteria for delineating Riparian Habitat Conservation Areas (RHCA). RHCA's are to be authorized in all forest watersheds. INFISH assigns both general management guidelines and specific riparian management objectives (RMOs).
- Provide and manage for riparian plant communities, which maintain a high level of riparian dependent resources.
- Riparian vegetation to provide an amount and distribution of large woody debris characteristic of natural aquatic and riparian ecosystems.
- Riparian vegetation to help achieve rates of surface erosion, bank erosion, and channel migration characteristic of those under which the communities developed.
- Provide and manage habitat of threatened, endangered, and sensitive species in an aggressive manner which contributes to the eventual removal of the species from the threatened, endangered, or sensitive status.

Desired Future Conditions are represented by the INFISH RMOs. The RMOs: pool frequency, water temperature, large woody debris, bank stability, bank angle, and width/ depth ratio are used to assess health of the system and project the minimum needed for good habitat. The goal is to achieve a high level of habitat diversity and complexity through a combination of habitat features, to meet the life-history requirements of the fish community inhabiting a watershed. The values for the INFISH RMOs are listed in the table below.

Table 1. INFISH Objectives

Habitat Feature	Interim Objective									
Pool Frequency (key)	Wetted width (ft.)	10	20	25	50	75	100	125	150	200

Habitat Feature (feature)	Interim Objective									
	Pools per mile	96	56	47	26	23	18	14	12	9
Water Temperature (supporting feature)	No measurable increase in maximum water temperature (7-day moving average of daily maximum temperature measured as the average of the maximum daily temperature of the warmest consecutive 7-day period). Maximum water temperatures below 59F within adult holding habitat and below 48F within spawning and rearing habitats.									
Large Woody Debris (forested systems)	>20 pieces per mile; >12 inch diameter; >35 foot length									
Bank stability (non-forested systems)	Greater than 80 percent stable									
Lower Bank angle (non-forested systems)	Greater than 75 percent of banks with <90 degree angle									
Width /Depth Ratio (supporting feature)	Mean wetted width divided by mean depth, <10									

Affected Environment

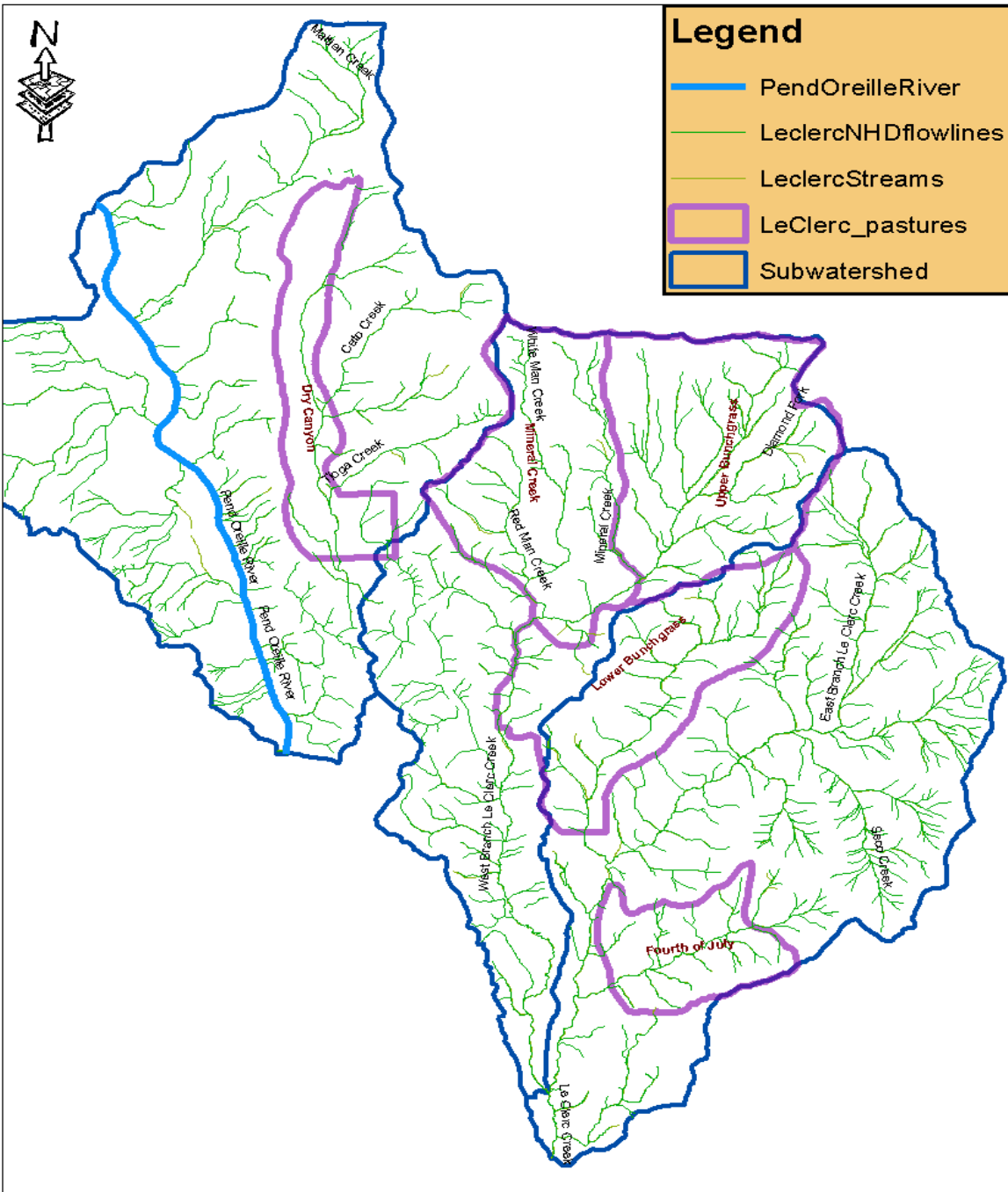
Analysis Area and Timeframe

The LeClerc Creek 10th Code Watershed is located mostly within the boundaries of the Colville National Forest in the northeast corner of Washington. The LeClerc watershed is located in the Pend Oreille 8th field HUC or subbasin. The streams within the LeClerc Creek watershed flow into the Pend Oreille River (Box Canyon Reservoir) that eventually flows into the Columbia River. Presently, there is blockage to upstream passage of fish, from Grand Coulee and other lower dams on the Columbia River (USFS 2009). The Pend Oreille River is divided into several reservoirs by five hydroelectric dams and upstream passage of fish within the Pend Oreille River is blocked approximately 20 miles downstream from the mouth of LeClerc Creek (USFS 2009).

The LeClerc Creek watershed has three branches, the West, Middle, and East Branches as well as several fish bearing tributaries. The Middle Branch is included within the East Branch watershed. The West and East Branches of LeClerc Creek merge to form LeClerc Creek which then flows into the portion of the Pend Oreille River impounded by Box Canyon Dam. East and West Branches have tributaries that include: Whiteman, Redman, Mineral, Saucon, Fourth of July and Diamond Fork Creeks (USFS 1998). The watershed also includes Dry Canyon Creek, an intermittent stream (USFS 1998 and 2009).

The analysis area is the LeClerc watershed (Figure 2). This area is sufficient to capture the maximum possible spatial extent of potential project effects (e.g. sediment). No effects are expected beyond the LeClerc watershed into the Pend Oreille River. The allotment is 23,413 acres and primarily located within the West Branch LeClerc Creek and East Branch LeClerc Creek (LeClerc Hydrology Report).

Figure 2. LeClerc Range allotment boundary and HUC 12 analysis area



The analysis timeframe will extend 5 years after project implementation, which should encompass the maximum temporal extent of any potential effects. Updated fencing and crossing construction are likely to begin in 2015 (see proposed action) and would continue for 3-5 years. In water construction activities would follow the ARBO II 2013 work window of August 1 to August 31st.

Data collection

Data used for the aquatic species report were biotic and habitat surveys completed by USFS personnel in branches of LeClerc Creek (1992, 1994, 2004, 2005 and 2007), Public Utility District No. 1 of Pend Oreille County (PUD) 2010, Middle Branch LeClerc Creek General Habitat Surveys, and Kalispel Tribal biologists juvenile bull trout surveys in the West Branch between 1995 and 2002..

Existing Condition

Regional Population Condition

Regionally, most native salmonid numbers and distribution are lower than historic levels. This decline is in part due to dam construction and operation, water diversions, introduction of non-native fish species, and habitat degradation.

Westslope cutthroat trout (Sensitive USFS Region 6 List), a subspecies of cutthroat trout, range from the upper Kootenay River drainage of British Columbia and Montana; the upper Columbia and Fraser Rivers of British Columbia; the Pend Oreille, Clark Fork, St Joe, and Spokane River drainages; the Salmon and Clearwater drainages; the Lake Chelan drainages and the John Day River drainage, in Oregon. On the east side of the Continental Divide, the Westslope cutthroat is native to the South Saskatchewan River and the upper Missouri River drainage (Behnke 1992).

Bull trout are native to the Pacific Northwest and are found in North America from the Oregon-California border eastward to Nevada, north through western Montana and western Alberta, westward through British Columbia, and north to at least 60 degrees N latitude in Alaska (Wydoski and Whitney 2003). Natural climatic warming and loss of cold water habitat since the Pleistocene period exacerbated by effects of human activities have reduced their distribution (Cavender 1978).

Watershed Population Condition

The analysis area contains portions of the LeClerc Creek watershed. Limited historic information is available for the fish populations of LeClerc Creek, the drainage within the analysis area. LeClerc Creek has been historically stocked with eastern brook and rainbow trout by the state game department.

The LeClerc Creek watershed has three branches, the West, Middle, and East Branches as well as several fishbearing tributaries. These tributaries include Whiteman, Redman, Mineral, Saucon, and Diamond Fork Creeks for the West Branch and Fourth of July Creek for the East Branch. Only portions of the West and Middle Branches and Fourth of July Creek fall within the analysis area. The analysis area also includes Dry Canyon which does not have any flow within its bounds. The West and East Branches of LeClerc Creek merge to form LeClerc Creek which then flows into the portion of the Pend Oreille River impounded by Box Canyon Dam. (See Figure 2)

The West Branch contains eastern brook trout (*Salvelinus fontinalis*), Westslope cutthroat trout (*Oncorhynchus lewisi clarki*), brown trout (*Salmo trutta*), coastal rainbow trout (*Oncorhynchus*

mykiss irideus), and bull trout (*Salvelinus confluentus*) (USFS 2005-2007 and KNRD 1995). Genetic analysis of the Westslope cutthroat trout population in the West Branch, conducted by the Wild Trout and Salmon Genetics Lab of the University of Montana, indicates that 76% of the cutthroat trout sampled contained only Westslope cutthroat trout alleles with no evidence of introgression from rainbow trout. The remaining 24% had genetic contribution from both rainbow and Westslope cutthroat trout (BPA 2001). Bull trout numbers are extremely low in the West Branch and no sampling for genetic purity has occurred.

The Middle Branch contains eastern brook trout, cutthroat trout, and brown trout (USFS 2005). The population in Fourth of July Creek was also genetically analyzed and found to be pure Westslope cutthroat trout above a fish passage barrier in the form of a waterfall.

The analysis area is in Clark Fork River Basin Critical Habitat: Unit 31, Lake Pend Oreille Core Area. The 2008 Bull Trout / *Salvelinus confluentus* 5-Year Review: Summary and Evaluation done by the US Fish and Wildlife Service described the status of the bull trout population in the Lake Pend Oreille Core area as high risk. The report lists the population as having 1-50 adults and being under a substantial, imminent threat. (USFWS, 2008)

Streams in the LeClerc Creek watershed are designated critical habitat for bull trout (USFWS 2010). (See Figure 3) LeClerc Creek is core area habitat for bull trout within the Draft Columbia Headwaters Recovery Unit Implementation Plan for Bull Trout Recovery Plan (RUIP)(USFWS 2014). The RUIP sites livestock grazing as a primary threat to bull trout by causing riparian and instream degradation through loss of LWD, and pool reduction in LeClerc Creek. Locally, individual bull trout have been found in Box Canyon Reservoir, a 55 mile segment of the Pend Oreille River from Box Canyon Dam to Albeni Falls Dam. Primarily adult migratory bull trout have been captured in the reservoir between 1988 and 2012. Genetic testing has identified the origins of bull trout captured between 2003 and 2009 as Lake Pend Oreille tributaries.

Biotic surveys were completed by USFS personnel in branches of LeClerc Creek (1992, 1994, 2004, 2005 and 2007) to determine fish presence. No bull trout were found during these surveys. However, juvenile bull trout have been found in the West Branch by Kalispel Tribal biologists between 1995 and 2002. In addition, an adult female bull trout was found on her redd in the West Branch in 2000 (personal communication Todd Andersen, KNRD 2000). The large size of this female (20-22 inches in length) indicated that it had an adfluvial or fluvial life history.

River Basin Habitat Condition

The Pend Oreille River between Box Canyon and Albeni Falls dams is a run of the river reservoir (Box Canyon Hydroelectric Project –FERC 2042). The water retention time is longer, water velocities slower, water temperatures slightly higher and channel width is wider than when the river was in its free flowing condition. The reservoir now supports much greater biomass of aquatic vegetation than in its riverine form. Eurasian water-milfoil, an aquatic noxious weed, and curly pondweed, a non-native plant, comprise a significant portion of this aquatic vegetation. Former riffles, gravel bars, side channels and pools have been inundated by the present water levels behind the dam. Large woody debris is almost non-existent. The habitat is more suitable for spiny-ray fish than for salmonids due to lack of habitat complexity and increase in shallow water habitat.

Watershed Existing Habitat Condition

Forest Service Surveys

Portions of the streams on NFS lands in the analysis area were most recently surveyed between 2004 and 2007 using the R6 Hankin-Reeves Stream Survey protocol. Segments of the stream also lie within private lands and those reaches were not surveyed.

There is one possible natural seasonal blockage presently preventing fish passage between Box Canyon Reservoir and a portion of the West Branch LeClerc Creek in the analysis area. The surface flow periodically goes subsurface in a section of the West Branch in the western quarter of section 5, T35N, R44E. It is presently unclear if the aggradation of streambed material in this stream section is due to past natural or human actions. There is also a historic diversion dam on the West Branch upstream from this section that is also a seasonal, if not yearlong, barrier to upstream fish passage in Section 8, T36N, R44E.

There are at least two undersized and improperly placed culverts on the Middle Branch of LeClerc Creek, in the analysis area, that prevent upstream fish passage permanently or seasonally that are being address in the Public Utility District No. 1 of Pend Oreille County (PUD) Trout Habitat Restoration Plan project pre-proposal, Upper Middle Branch LeClerc Creek Enhancement Project (2012).

Outside of the analysis area, a natural falls/cascade on lower Fourth of July Creek tributary to the East Branch of LeClerc Creek prevents upstream fish passage beyond the first 0.3 miles of this stream.

Table 2. Region 6 Survey Protocol, Pend Oreille Utility District protocol, and PIBO monitoring.

Survey Method	Stream Name	Stream Reach and Year Surveyed	Length	Average Width	Pool Frequency (pools per mile)	Large Woody Debris	Bank Stability	Bank Angle	Wetted Width/Depth Ratio
PIBO	Dry Creek	DMA Site 2013			0		100	141	
FS	Fourth of July Creek	1 (2007)	8927	4.8	17.2	60			4.3
PUD		PUD 1	2,019		49.6	86.1			
PUD		PUD 2	818		45.4	90.3			
PUD		PUD 3	2,955		71.3	60.7			
PUD		PUD 4	1,770		65.5	83.4			
PUD		PUD 5	1,430		51.7	7.4			
PUD		PUD 6	2,970		67.6	23.2			
PUD		PUD 7	5,973		47.5	16.9			
PUD		PUD 8	1,312		48	28			
FS	Middle	1 (2005)	3681	6	39	3			6.9

. Cells highlighted yellow do not meet INFISH RMO standards.

FS	Branch LeClerc Creek	2 (2005)	3956	8	20	17			8.1
FS		4 (2005)	6404	7	44	7			5.4
PUD	Middle Branch LeClerc Creek (pre- project)	PUD 3	1,724		22.2	49.7			
PUD		PUD 5	1,038		45.9	27.3			
PUD		PUD 6	1,424		37	67.5			
PUD		PUD 7	3,561		12.1	100.8			
PUD		PUD 8	4,931		29	57.1			
PUD		PUD 9	1,506		38.5	80.6			
PUD		PUD 10	4,149		31.7	69			
PUD		PUD 11	1,338		82.9	61.1			
PUD	Upper Middle Branch LeClerc Creek	PUD 12	984		37.5	66.9			
PUD		PUD 13	365		72.3	69.2			
PUD		PUD 14	2,805		47	71.1			
PUD		PUD 15	3,272		100.3	23.4			
PUD		PUD 16	1,462		39.6	47.4			
PUD		PUD 17	1,619		42.2	66.2			
PUD		PUD 18	2,714		46.5	116.3			
FS	West Branch LeClerc Creek	1 (2005)	6623	20	11	18			6.8
FS		3 (2005)	15407	28	13	16			7.8
FS		4 (2005)	9779	26	4	18			8.5
FS		5 (2005)	9877	19	10	26			6.3
FS		6 (2005)	6574	16	11	13			4.1
FS		7 (2005)	9436	10	21	20			4.6
FS		8 (2005)	4066	7	36	78			5.1
PIBO		DMA Site 2013			32		100	105	
PUD	Whiteman Creek	PUD RW1	4,316		97.7	15.1			
PUD		PUD WM1	4,720		67.1	16.7			
PUD		PUD WM2	2,412		107.2	10.9			
PUD		PUD WM3	1,740		100.3	14.9			
PUD		PUD WM4	341		77.6	13			
PUD		PUD WM5	1,937		111.9	9.4			
PUD		PUD WM6	3,838		115.6	12.0			

Pools per mile

The INFISH pools per mile RMO is not being met in the surveyed reaches in the planning area. Overall, the LeClerc Creek watershed drains an area of decomposed granitic material. Stream bottoms, streambanks, and terraces consist of glacial drift and outwash in upper West Branch, Middle Branch, and the Fourth of July Creeks. Stream bottoms, streambanks, and terraces in the lower reaches of the West Branch and Dry Canyon consist of glacial-lacustrine material. This material is highly erodible, contributing to a high bed load that continually fills in pools. Due to

the natural and unnatural low number of pools, the watershed is **not properly functioning** for pool frequency and quality and large pools

LWD

The INFISH riparian management objective is to have 20 pieces of large down wood (12 inches in diameter at 35 feet from the large end) in each mile of stream. This is achieved through the standard of managing the riparian habitat conservation areas to provide these large pieces of wood to the stream channel (INFISH TM-1b). For West Branch of LeClerc Creek, only reaches 5, 7, and 8 meet this objective. Fourth of July Creek meets this objective. Middle Branch does not.

A majority of the deficient reaches have some commonality in that low levels of LWD are most often related to segments of streams with roads located within the riparian area. These roads have eliminated a portion of the potential source area contributing instream wood. In addition, the increased access from these roads to the dispersed recreation uses, and firewood cutters for many years also has reduced contribution of instream wood. Currently, there are very few trees in these valley floors large enough to meet the INFISH criteria for large wood if they were to fall in the stream. The lack of recruitment sources in these reaches may contribute to the low numbers of large woody debris. Overall, the watershed is **functioning at risk** for large woody debris.

Bank Stability / Bank Angle

The INFISH riparian management objective is to have >80 percent stable banks and >75 percent of banks with <90 degree angle. The two DMAs measured meet the standard for stable banks, but the bank angles do not.

WWD

The INFISH riparian management objective is to have a wetted width to depth ratio below 10. This is being met in all of the reaches surveyed.

Temperature

Water temperatures in all three Branches of Leclerc Creek have been collected since 2002. The trend in Middle Branch and East Branch LeClerc Creeks has been fairly consistent with temperatures exceeding the state water quality standard of 16°C by early July and continuing to exceed throughout the summer into late August. This trend can be observed in figure 9 where temperatures in Middle Branch LeClerc Creek were in exceedance by as much as 3°C in 2010, 2013, and 2014. Previous year data consistently show exceedance as high as 6°C in both East and Middle Branches of LeClerc Creek. Canopy cover data has been collected by the Pend Oreille Public Utility District (POPUD) on Middle Branch LeClerc Creek in 2012 and 2013. Spot data collected by the Kalispel Tribe shows the reach of West Branch LeClerc Creek above Ballpark Meadow/Diamond City ball field are also in exceedance during the summer months.

PIBO monitoring

Kershner and Roper (2010) found that many of the PACFISH/INFISH Biological Opinion (PIBO) Effectiveness Monitoring reference reaches did not meet RMOs, such as wetted width-to-depth, percent undercut banks, number of pieces of large wood, and numbers of days exceeding 15°C. These authors also stated that the current RMOs were originally designed as an early warning of potential negative effects of land management on stream/riparian conditions, and values that did not meet RMOs were thought to potentially represent unsuitable habitat conditions for important salmonids. Their analysis of data from federally-managed sites in the interior Columbia River basin indicates that the usefulness of RMOs may be questionable. In summary, they found that none of the 726 reference and managed reaches surveyed met all RMOs, and in a previous analysis (Henderson et al. 2005) found that only 2% of the reference reaches met the RMO for wetted width-to-depth ratio and that 16% met the reference criteria for percent undercut banks.

Natural disturbances play an imperative role in shaping the setting of streams and the conditions that are found within them (Benda et al. 1998). They went on to say that it is apparent that all streams will most likely not meet all habitat objectives during some point in their history as the series of natural disturbances both influences and resets them. In fact, some of the PIBO reference sites come from wilderness areas that have experienced severe disturbance from wildfires and associated debris flows.

TABLE 3. PIBO MANAGED AND REFERENCE MEAN VALUES FOR SELECTED RIPARIAN, CHANNEL MORPHOLOGY, AND HABITAT ATTRIBUTES.

Riparian/Channel Attribute	PIBO Managed Mean	PIBO Reference Mean	RMSE¹	Source of Information
Bankfull W/D Ratio	23.9	22.6	4.0	Henderson et al. 2005
Bank angle (°)	108.0	99.3	(6.5)	Al-Chokhachy et al. 2010
Percent undercut banks (%)	26.4	32.7		Al-Chokhachy et al. 2010
Percent pool habitat (%)	40.9	43.3	12.9 (5.8)	Al-Chokhachy et al. 2010
Bank stability (%)	74.6	79.9		Henderson et al. 2005
¹ RMSE is an estimate of the potential sampling error for selected stream attributes (a measurement of the temporal variability – based on repeat measures analyses at sites over a 9-year period). Values are from Roper et al. (2010) and Al-Chokhachy et al. (2011).				

Table 4. PIBO survey results for the LeClerc project area.

Stream Name	Year	Bankfull W/D Ratio	Bank angle (°)	Percent undercut banks (%)	Percent pool habitat (%)	Bank stability (%)
West Branch	2003	39.56	115	30	51	98

Leclerc						
	2008	28.61	112	28	28	98
	2013	25.75	105	44	32	100
Average		31.31	111	34	37	99
Dry Creek	2003	11.49	134	5	0	98
	2008	16.58	140	3	60	95
	2013	11.84	141	5	0	100
Average		13.30	138	4	20	97

Data from the West Branch LeClerc Creek reveals that bank stability; bank angle, percent undercut banks and percent pool habitat meet the PIBO Managed and Reference Mean Values. The data for Dry Creek indicates good bank stability and data for bank angle and percentage pool habitat are slightly below the PIBO estimates. Data for bankfull width to depth ratio for both streams surveyed with the PIBO protocol are outside of the values but appear to be trending toward improvement.

A channel's bankfull width-depth ratio is an important indicator of whether a stream is able to perform the various tasks that lead to a healthy riparian area. This indicator, along with appropriate riparian vegetation, is critically important for a stream to maintain its dimension, pattern, and profile even during moderate to high (10-25+ year return intervals) flow events. If continued monitoring shows that overall channel shape was maintained, the expected outcome will be improvement in the other stream attributes, thereby enhancing habitat complexity.

Pend Oreille Public Utility District Trout Habitat Restoration Program

The Box Canyon Hydroelectric Project (Project; FERC 2042) is operated by the Public Utility District No. 1 of Pend Oreille County (POPUD). The Project is located on the Pend Oreille River in Northeast Washington State, approximately 100 miles north of the City of Spokane. On July 11, 2005, the Federal Energy Regulatory Commission (Commission) issued a new license for the Project. Some of the provisions in the license were subsequently modified in a Settlement Agreement (SA) and included in an order amending the Project license on February 19, 2010 (130 FERC 61,148). The amendment order included a requirement for a Trout Habitat Restoration Program (THRP) in the Box Canyon watershed (Appendix A of the License Amendment Order, Revised 4(e) Condition 6). As part of the THRP, the District is required to restore 164 miles of tributary habitat.

Per the FERC license the POPUD has conducted five stream surveys within the analysis area. These are the Middle Branch LeClerc, Upper Middle Branch LeClerc, Whiteman, Redman, and Fourth of July Creeks (See Figure 2). The Middle Branch LeClerc Creek project area is located in Sections 16, 20, 21, and 29, T36N, R44E. The Upper Middle Branch LeClerc Creek project area is located in Sections 10 and 11 of T36N, R44E. The Whiteman Creek project area is located in Sections 5 and 8 of T36N, R44E, and Sections 29 and 32 of T37N, R44E. The Fourth of July project area is located in Sections 2, 3, 4, 5, and 8 of T35N, R44E. All of these project areas include some non-Forest Service lands outside of the analysis area.

One of these projects, the Middle Branch LeClerc Creek has been completed to date. In 2011, the District installed 266 pieces of large wood throughout the project area. The objective of the wood placement was to bring the number of pieces of wood and number of pools per degraded reach within desirable conditions. Monitoring in future years will determine if these objectives were met.

In 2011 and 2012, partly due to these roads related impacts to LWD recruitment, a 2.6 mile section of stream adjacent road was decommissioned along the Middle Branch. The decommissioned road prism was seeded and replanted with herbaceous grass, conifers and shrubs. In addition, four road stream crossings were removed and the stream was re-contoured to its channel.

The PUD surveys enumerated all LWD for the Middle Branch and Upper Middle Branch LeClerc Creek projects. Whiteman and Fourth of July Creeks surveys counted both all LWD and Large Woody Debris (Forest Service standards). This provides a comparison in that Large Woody Debris (Forest Service standards) accounts for 9.08% of All Large Wood for these two projects (range 6.64% - 11.52%). This conversion factor is used in Table 3 to convert All LWD into Large Woody Debris (Forest Service standards) category for the Middle Branch and Upper Middle Branch projects. Large Wood and Pools per 1,000 ft. were converted to miles by multiplying by 5.28.

Population and Habitat Indicators

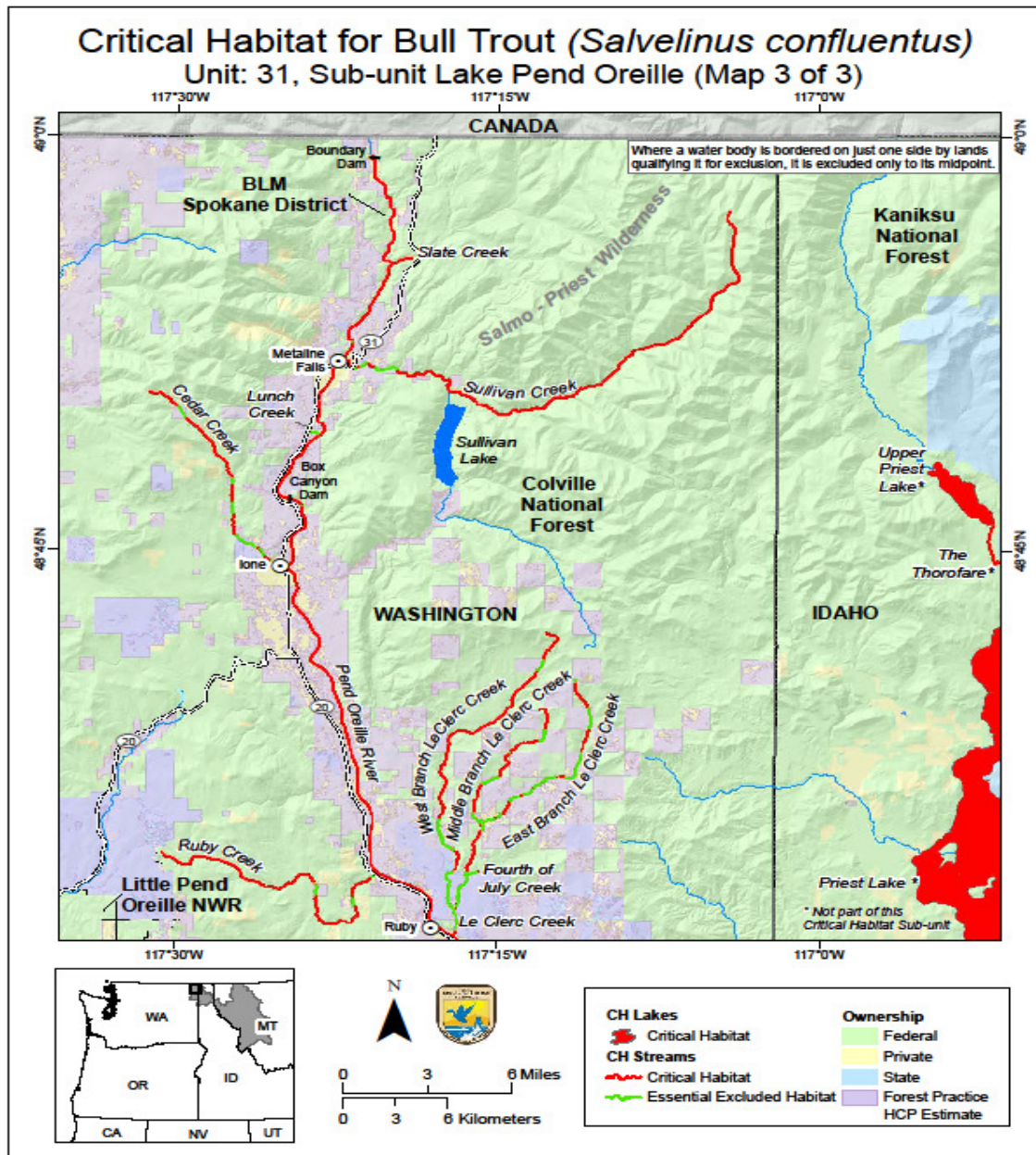
Environmental Baseline

The environmental baseline includes “the past and present impacts of all Federal, state, or private actions and other human activities in the analysis area, including the anticipated impacts of all proposed Federal project in the analysis area that have undergone Section 7 consultation and the impacts of state and private actions that are contemporaneous with the consultation in progress” (USFWS 2002). The environmental baseline is described in terms of properly functioning condition (PFC) which is the sustained presence of natural habitat-forming processes in a watershed that are necessary for the long-term survival of the species through the full range of environmental variation (USFWS 2002). The environmental baseline is described as properly *functioning*, *functioning at risk*, or *not properly functioning* by using habitat pathways and indicators (USFWS 2002). This document describes the environmental baseline for each indicator at the analysis area scale.

Federal Status of Bull Trout

Columbia River and Klamath River populations of bull trout were listed on June 10, 1998 as threatened under Federal ESA (63 FR 31647). The Columbia River Distinct Population Segment was federally listed due to habitat degradation and fragmentation, blockage of migratory corridors, poor water quality, and harmful management practices (USFWS 2002). Critical habitat for the analysis area is in the Sub-unit Lake Pend Oreille (Unit 31. The Pend Oreille is a “core” area within the recovery unit USFWS 2002). A core area consists of habitats that provide elements necessary for every stage of life (USFWS 2002). The LeClerc Creek complex within the core area was identified as an extant local population (USFWS 2002). There are 4.9 miles of Critical Habitat (CH) in Middle Branch LeClerc Creek and 7.0 miles of CH in West Branch LeClerc Creek (Figure 4).

Figure 3. Bull trout critical habitat.



Historical and Current Distribution of Bull Trout

Documentation exists that bull trout occupied the Columbia River as early as the 19th century (USFS 1998). From the 1930s through the 1970s, dams were built on the Columbia River and major tributaries in the U.S. and Canada. This changed fluvial habitat into the present reservoirs. Several of these dams did not provide for upstream fish passage including Grand Coulee Dam (USFWS 2002). These dams isolated the existing population of bull trout into smaller populations. These projects also modified the habitat by increasing water temperatures and eliminating the original complexity of habitat which included turbulence, riffles and pools.

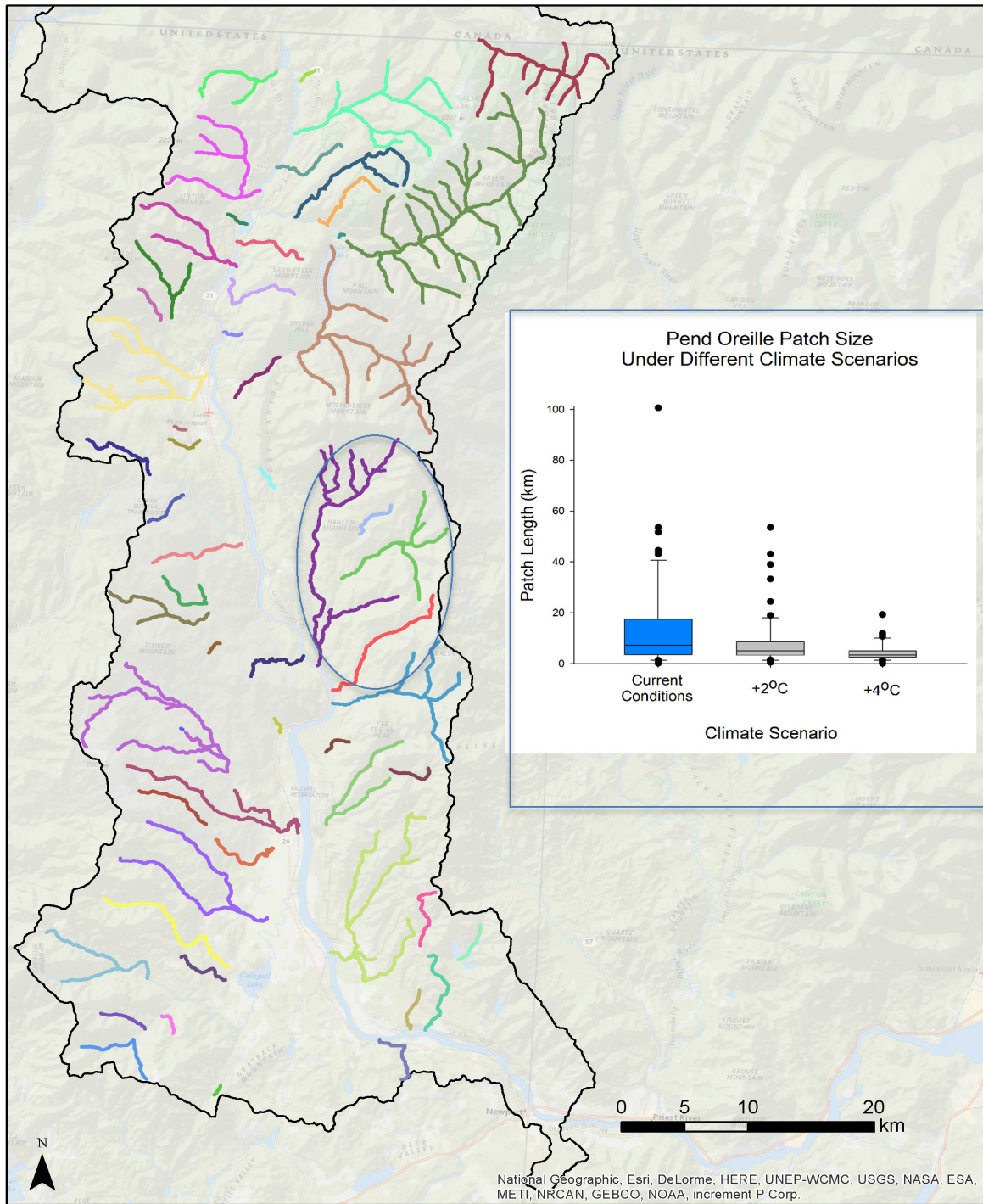
The current bull trout population size in the analysis area is unknown but is considered to be very low. Individual bull trout have been found in Box Canyon Reservoir, a 55 mile segment of the

Pend Oreille River from Box Canyon Dam to Albeni Falls Dam (data in project files). Adult migratory bull trout have been captured in the reservoir between 1988 and 2012 (data in project files). In 1993, two juvenile bull trout and in 1995 one juvenile bull trout were documented in LeClerc Creek (USFWS 2002). In 1998 a juvenile bull trout was documented at the confluence of Fourth of July Creek and East Branch LeClerc Creek (USFWS 2002). In 2001 an adult bull trout was observed on a redd in the West Branch of LeClerc Creek (USFWS 2002). In all, 7 bull trout have been captured in the watershed (Hanlon 2009). The location where the bull trout were captured does not clearly indicate whether these fish are resident or adfluvial in life history. However, the fish observed on her redd indicates that there is a possibility that the bull trout population could be adfluvial in life history in this watershed (Hanlon 2009). No bull trout have been detected in the Middle Branch LeClerc Creek; however, there is unimpeded access to this stream (data in project files). Lower Fourth of July Creek has a natural waterfall fish passage barrier and no bull trout are known to exist above the barrier. The USFS completed fish surveys in branches of LeClerc Creek in 1992, 1994, 2004, 2005 and 2007 (data in project files). No bull trout were found during these surveys.

Current habitat suitability

Based on a habitat mapping procedure that relied strongly on temperature stream networks that are currently suitable for bull trout were identified in the Boundary system (Figure 5) (Dunham et al. In Press). Results indicated widespread availability of suitable habitat in the basin, including a few relatively large stream networks with more than 40 km of available habitat. Results indicate that the lower portions of the Middle Branch LeClerc Creek are currently not suitable habitat for bull trout due to temperature and may be a barrier to migration into upper portion of the creek.

Figure 4. Current habitat suitability Map of the Boundary system, indicating contemporary patches of suitable habitat for bull trout. Box plots on the right indicate available habitat under each scenario (blue highlighted box corresponds to this map). Unique colors for stream lines represent individual patches. Based on Dunham et al. In Press.



Population and Habitat Indicators (USFWS 1998)

Population Size and Distribution

Population data for bull trout is limited to individuals captured or observed in LeClerc Creek. While future surveys and trapping may locate other bull trout, numbers are not expected to

increase more than slightly in the near term. Presence of juveniles indicates that successful reproduction of bull trout is occurring in LeClerc Creek. For this reason, the subpopulation size is considered to encompass less than 50 adults and is **not properly functioning**.

Growth and Survival

There is presently no trend data on the bull trout population. It is impossible to predict long-term growth and survival of the bull trout population without this information. This indicator is therefore considered not applicable for the purposes of this analysis.

Life History Diversity and Isolation

The life history of the few individuals is not known. However, the migratory form of bull trout that used the free flowing Pend Oreille River no longer exists due to fish blockage in the form of dams. The population is isolated to Box Canyon Reservoir and its tributaries. One individual fish was observed on a redd in the West Branch. The size of the fish indicated that the individual was adfluvial in life history. However, not enough is known about the few juvenile bull trout to make a determination as to their life history or what this isolated watershed is able to support. This indicator is therefore considered not applicable for the purpose of this analysis.

On the Pend Oreille River, construction of a fish ladder for permanent passage at Albeni Falls Dam, as well as completion of the Box Canyon Dam and Boundary Dam fish passage currently in progress, will be critical to improve population connectivity and recover bull trout in this recovery unit (USFWS 2014).

Persistence and Genetic Integrity

There is no data on the connectivity between bull trout in Box Canyon Reservoir and the analysis area. A few bull trout have been found in other tributaries of Box Canyon Reservoir and the reservoir itself (USFS 1998). Eastern brook trout and brown trout are found in tributaries to Box Canyon Reservoir (USFS 1998). The probability of hybridization is high but unknown (USFS 1998). Due to the low number of bull trout in the watershed and hybridization and competition with other trout species, bull trout are considered **not properly functioning** for persistence and genetic integrity.

Temperature

Bull trout appear to have more specific habitat requirements than other salmonids (Rieman and McIntyre 1993). Stream temperature and substrate composition may be particularly important characteristics of suitable habitats. Bull trout have repeatedly been associated with the coldest stream reaches within basins. Water temperatures in all three Branches of Leclerc Creek have been collected since 2002 (LeClerc Hydrology report). The trend in Middle Branch and East Branch LeClerc Creeks has been fairly consistent with temperatures exceeding the state water quality standard of 16°C (60.8 °F) by early July and continuing to exceed throughout the summer into late mid-September. Previous year data consistently show temperatures exceeding the maximum by as much as 6°C (42.8 °F) in both East and Middle Branches of LeClerc Creek.

State standards notwithstanding, these water temperatures during the summer months, are at or above the tolerance levels of bull trout fry and juveniles. Temperatures in excess of about 15 °C (59 °F) are thought to limit bull trout distribution (USFWS 2002). High water temperatures appear to be directly related to the elimination and reduction of riparian habitat, particularly in

the Middle Branch and lower East Branch of LeClerc Creek (USFS 1998). Riparian vegetation has been replaced by gravel roads in certain locations. In other areas, the native vegetation has been harvested or burned historically and replaced with smaller trees and brush. Many riparian areas particularly in the Middle Branch have been grazed with shrubs and forbs being replaced with non-native grasses (USFS 1998).

Stream reaches with the greatest cattle related impact from within the LeClerc Creek subwatersheds and Dry Canyon Catchment are predominantly found where roads are located within the riparian area or at road stream intersections where cattle can easily access the stream and the adjacent riparian area for water and more desirable vegetation (LeClerc Hydrology report). Middle Branch LeClerc Creek receives the majority of the grazing impacts throughout the grazing season, resulting in a grazed riparian area that may lead to stream bank instability. Removal of riparian vegetation may have an influence on the temperature impaired stream reach in Middle Branch LeClerc Creek. Efforts to reduce stream temperatures in this area include relocation/obliteration of about 2.5 miles of FSR 1935000 located within the riparian zone of Middle Branch LeClerc Creek road in 2012. Additional restoration efforts occurring in the East and West Branch LeClerc subwatersheds include in-stream habitat improvements by Pend Oreille Public Utility District (PUD). Efforts in 2011 and 2012 included placing wood, hardened crossings, and fencing of the riparian area in the lower reaches of Middle Branch LeClerc Creek. Overall, due to high summer stream water temperatures the watershed is **functioning at risk** for temperature.

Suspended Sediment-Intergravel Dissolved Oxygen/Turbidity & Substrate Character and Embeddedness

These two indicators have similar causal mechanisms of fine sediment entering streams from erosion or runoff. They are lumped together for the analysis. Sediment entering a stream can fill interstitial spaces within spawning gravels and other size substrate that is used for hiding cover for fry and juveniles and habitat for macroinvertebrates. Increased levels of sediment can reduce the quality of aquatic habitat or eliminate the habitat altogether.

High embeddedness levels exist in a majority of the reaches surveyed within the analysis area (data in project files). The soil movement from riparian areas is from usage by livestock, roads, and from other sources including recreation. Therefore, the watershed is **functioning at risk** for suspended sediment-intergravel dissolved oxygen/turbidity and substrate character and embeddedness.

Chemical Contaminants/Nutrients

There are no activities presently that are sources of chemical contamination or excess nutrients that would enter the stream system. There are two sources of nutrients in the watershed that are management related. These are sediment input, primarily from the existing road system and cattle waste. The amount of nutrients presently is not causing any violation of CWA standards. LeClerc Creek is considered **properly functioning** for this reason.

Physical Barriers

There is one possible natural seasonal blockage presently preventing fish passage between Box Canyon Reservoir and a portion of the West Branch LeClerc Creek in the analysis area. The surface flow periodically goes subsurface in a section of the West Branch in the western quarter

of section 5, T35N, R44E. It is presently unclear if the aggradation of streambed material in this stream section is due to past natural or human actions. There is also a historic diversion dam on the West Branch upstream from the section that is also a seasonal, if not yearlong, barrier to upstream fish passage in Section 8, T36N, R44E. Because of the possible fish passage barriers, the watershed is **functioning at risk** for physical barriers.

Large Woody Debris

The INFISH RMO is a minimum of 20 pieces of large down wood per mile of stream. This is achieved through managing the RHCAs to provide large pieces of wood to the stream channel (INFISH TM-1b). The Forest Service stream survey data shows that 3 of 11 reaches meet the INFISH RMO for LWD. The PUD data shows that 28 of 30 reaches meet the INFISH RMO standard. Combining the Forest Service and PUD data by stream, 83%, 64%, and 78% of reaches meet the standard for Middle/Upper Middle Branch, West Branch/Whiteman, and Fourth of July Creeks, respectively.

The Forest Service surveys occurred approximately four years earlier than the PUD surveys. The INFISH RMO is defined as wood at least 12 inches in diameter at 35 feet from the large end. The PUD criteria are wood at least 12 inches in diameter and at least as long as the bankfull width, which is less than 35 feet in all reaches. Therefore, the PUD criteria would count pieces of wood shorter than 35 feet. These data are still useful as the PUD surveyed more areas and occurred more recently.

A majority of the deficient reaches have some commonality in that low levels of LWD are most often related to segments of streams with roads located within the riparian area. These roads have eliminated a portion of the potential source area contributing instream wood. In addition, the increased access from these roads to the dispersed recreation uses, and firewood cutters for many years also has reduced contribution of instream wood. Currently, there are very few trees in these valley floors large enough to meet the INFISH criteria for large wood if they were to fall in the stream. The lack of recruitment sources in these reaches may contribute to the low numbers of large woody debris. Overall, the watershed is **functioning at risk** for large woody debris.

Pool Frequency and Quality and Large Pools

These indicators were lumped together because each is affected by similar mechanisms. Pool habitats form mostly as a result of the interaction between the stream and large woody debris accumulations. The INFISH Pool Frequency RMO varies depending on the width of the stream. Most reaches surveyed vary between 5 and 25 ft. with 10 to 20 ft. most common. These widths correspond to a pool frequency of 96 pools per mile at 10 ft. wide and 56 pools per mile at 20 ft. wide. The Forest Service stream survey data shows that 0 of 11 reaches meet the INFISH RMO for pool frequency. The PUD data shows that 7 of 30 reaches meet the INFISH RMO standard. Combining the Forest Service and PUD data by stream, 11%, 36%, and 0% of reaches meet the standard for Middle/Upper Middle Branch, West Branch/Whiteman, and Fourth of July Creeks, respectively. Although no reaches in Fourth of July meet the INFISH RMO for pool frequency, the lowest PUD value is 45.4 pools per mile and the PUD average for all reaches is 55.8, which is approaching the standard.

Forest Service Reach 5 of the West Branch is influenced by the presence of an historic diversion dam that has accumulated sediment over time. This accumulation could be the primary reason

for the low numbers of pools per mile within this reach. Overall, the LeClerc Creek watershed drains an area of decomposed granitic material. Stream bottoms, streambanks, and terraces consist of glacial drift and outwash in upper West Branch, Middle Branch, and the Fourth of July Creeks. Stream bottoms, streambanks, and terraces in the lower reaches of the West Branch and Dry Canyon consist of glacial-lacustrine material. This material is highly erodible, contributing to a high bed load that continually fills in pools. Due to the natural and unnatural low number of pools, the watershed is **not properly functioning** for pool frequency and quality and large pools.

Off-channel Habitat

There are few side channels in the LeClerc Creek watershed and no off channel ponds according to the habitat inventory data. The small amounts of this habitat are found primarily in the West and East Branches of LeClerc Creek. Side channels ranged from 1.1 to 6.3% of the habitat surveyed on the West Branch and 0 to 0.8% for the East Branch. Tributaries to these branches such as Fourth of July, Whiteman and Mineral Creeks, tend to be Rosgen B3 or B4 channel types in narrow valley forms which may explain their lack of off channel habitat. Due to the small amount of off channel habitat on the branches however, LeClerc Creek is considered **not properly functioning** for this indicator

Refugia

Habitat capable of supporting strong and significant populations of native salmonids, particularly bull trout, is scattered throughout the LeClerc Creek watershed. This habitat is not connected for all life stages of bull trout due to natural and manmade blockages (culverts) to fish isolating the refugia. Refugia are primarily located in the upper headwaters of the East and West Branches and in their tributaries, Fourth of July, Whiteman and Mineral Creeks. Although no bull trout are known in these reaches, Westslope cutthroat trout thrive in these areas. There are also small areas of refugia located on lower West and East Branches of LeClerc due most likely to groundwater upwelling where bull trout juveniles were found. This watershed is considered **functioning at risk** due to the isolation, size and scattered distribution of consistent high quality habitat.

Width to Depth (WD) Ratio

The width to depth ratio as described in INFISH is for wetted width to depth. PUD collected bankfull width to depth (BFWD) data. In previous analyses on Hankin and Reeves data across the Forest, a BFWD ratio below 13 was found to be indicative of good bank and channel stability.

The Forest Service stream survey data shows that all of the reaches meet the INFISH RMO for WWD. The PUD data shows that 18 of 30 reaches were below the 13 ratio. Combining the Forest Service and PUD data by stream, 56%, 57%, and 100% of reaches meet the standard for Middle/Upper Middle Branch, West Branch/Whiteman, and Fourth of July Creeks, respectively.

Dispersed recreation and livestock use of localized riparian areas in these reaches may be having an effect causing higher BFWD ratios. Excessive sediment entering the creek above these reaches also can cause the pools to fill and stream channels to widen. Overall, the watershed is **functioning at risk** for width to depth ratio.

Streambank Condition

All reaches surveyed within the LeClerc Creek watershed have streambanks that have less than 100% vegetative cover. A majority of the reaches surveyed on the Middle Branch have streambanks with less than 50% vegetative cover and have been rated as unstable. A majority of the reaches on the East and West Branches and their tributaries, Whiteman and Mineral creeks as well as Fourth of July Creek, support 50 to 75% vegetative cover and are rated as moderately stable. The unstable condition of some of the streambanks is the result of grazing of riparian vegetation, compaction from dispersed camping or past road construction. For this reason, the watershed is considered overall to be **not properly functioning** since less than 80% of its streambanks are considered to be stable.

Floodplain Connectivity

Excessive degradation of riparian vegetation exists particularly along the banks of the East and Middle Branches. Obliteration and rehabilitation of riparian roads along the East Branch are slowly improving floodplain connectivity. Conditions elsewhere including the West Branch, Fourth of July, Whiteman and Mineral Creeks are not in a similar state. Off channel areas tend to be limited in the watershed. It is not known whether overland flows are maintaining the function of wetlands since not much wetland presently exists. Historic frequency of overbank flows is unknown for comparison. On many reaches there is moderate to high impairment of riparian function, therefore, the watershed is **not properly functioning** for floodplain connectivity.

Changes in Peak/Base Flows

There is insufficient information concerning flow regimes for the LeClerc Creek drainage (no hydrograph). In addition, there are no undisturbed watersheds of similar size, geology and geography for comparison. Due to the high density of roads and high level of acreage in harvested openings within the watershed, there is likely an effect to the natural flow regime. Road surfaces and ditches act as intermittent sources of surface flow that would otherwise not naturally exist. Decreases in the density of the canopy, due to wildfire and past timber harvest and replacement of forest by roads, farm or pastureland, in turn, decreases the interception of precipitation and may increase the rate of snowmelt in the spring. However, the degree of alteration of the watershed from its previous natural hydrology is not known. The watershed is considered **functioning at risk** due to past timber harvest and road density.

Increase in Drainage Network

A density of 4.3 miles of road per sq. mi. exists within the East Branch LeClerc Creek subwatershed (this includes the Middle Branch). As well, a density of 2.5 miles of road per sq. mi. exists within the West Branch LeClerc Creek subwatershed. Although not calculated, the drainage density has been increased by the existing road system. These increases in the drainage network place the watershed as **functioning at risk** for this indicator.

Road Density and Location

Hydrographs do not exist for each subwatershed for detailed flow regimes. The level of sediment input from roads in these watersheds is not known since the natural level of erosion into these streams is not known. There are presently 7 culverts on Forest Service and county roads that are blocking upstream fish passage on the Middle Branch of LeClerc Creek. Six of these culverts are located on FS Rd. 1935 and one culvert on County Rd. 3521. Approximately 6 miles of suitable

spawning and rearing habitat are unavailable to salmonids in the Middle Branch of LeClerc Creek. Less than 2.4 mile of roads/sq. mile is considered **functioning at risk** for bull trout habitats.

Disturbance History

Disturbances have occurred historically in the form of forest fires and in the form of landslides along the East and West Branches. Landslide prone areas are concentrated in the riparian areas of the streams and are unstable in nature. These conditions place the watershed in the **functioning at risk** classification.

Riparian areas

Past historic events and activities such as wildfires, flume construction, riparian harvest, cattle grazing, and the construction of roads in riparian habitat, have modified or eliminated riparian vegetation throughout the watershed. Some areas such as the headwaters of the three branches and tributaries such as Fourth of July, Whiteman and Mineral creeks, have intact functioning riparian communities with few road crossings and species composition expected of the natural community. However, past historic and present use has caused a moderate loss of connectivity and function between these better functioning riparian areas. On portions of the East and Middle Branches, the riparian vegetation has been replaced by riprap and roadbeds, creating gaps in connectivity and total loss of function (i.e. large wood and detritus recruitment, shading, cover, bank stabilization). In other areas, vegetation is not at its potential due to past riparian harvest or fires limiting the numbers of large diameter individual trees and stands.

Due to the moderate loss of function and connectivity within portions of the watershed, the resultant low complexity of instream habitat (low numbers of large instream wood, unstable banks, low pool frequency, low overhead canopy levels) and higher than natural summer stream temperatures, this watershed is classified as **functioning at risk**.

Disturbance Regime

The LeClerc Creek watershed appears to have fairly stable natural processes except within portions of the East and Middle Branches. These areas are prone to landslides within the RHCA. Stand replacing events, such as wildfire, appear to be infrequent. The habitat has recovered from the last major fires in the early 1930s. It is continuation of some actions such as road use and cattle grazing that continue to accentuate these localized disturbances. The watershed is considered **functioning at risk** for these reasons.

Summary/Integration of all Species and Habitat Indicators

Habitat quality in the LeClerc Creek watershed ranges from poor to good. Past disturbances, natural and human-caused, have altered the channel equilibrium. The system appears to be out of balance. Habitat characteristics are questionable for the continued viability of the bull trout population although successful reproduction is occurring within the watershed. Although the size and distribution of the bull trout population is not known, the low numbers presently indicate that the long term viability and ability to recover from environmental disturbance may be reduced. The Westslope cutthroat trout population, the other native salmonid in this watershed, should have the resilience to recover from any short term disturbance within those reaches with better habitat conditions such as Fourth of July, Whiteman and Mineral Creeks. Due to the concern

about low numbers of bull trout and areas of poor habitat quality within the watershed, this indicator is considered **not properly functioning**.

Environmental Consequences

Table 6. Summary of Measures by Alternative

Significant Issues	Measures between alternatives (approx. values)	Alternative A (No Change)	Alternative B (No Grazing)	Alternative C (Proposed Action)	Alternative D (Mod. of Alt C)
Effects of Livestock Grazing on Riparian and Aquatic Functions	Miles of designated critical habitat for bull trout accessible to livestock	12.9	0	11.2	12.1
	Miles of fish-bearing streams accessible to livestock	32.8	0	24.8	27.5
	Acres of wetlands accessible to livestock	40	N/A	35	35
	Number of hardened stream crossings for livestock	3	0	5	5
	Number of upland water sources needed (water troughs)	0	0	4	4
	Adaptive management strategy in place?	No	N/A	Yes	Yes

Alternative A No Change (Current Management)

This alternative would authorize grazing under the existing management plan. There would be no change to existing allotment or pasture boundaries, season of use, and permitted number of cow/calf pairs (101). No new improvements would be installed, with the exception of a riparian enclosure on the lower Middle Branch LeClerc Creek that was planned and approved prior to this project. Other planned management activities would continue.

Direct and Indirect Effects

- **Issue 1:** Restoration of both channel and riparian habitat is needed to provide for the recovery of bull trout, a listed species and the continued sustainability of the Westslope cutthroat trout, a sensitive species.

Existing stream and riparian habitat conditions are expected to remain at current levels under this alternative and no range improvements would be added, consequently, fish populations would continue to be represented primarily by eastern brook and Westslope cutthroat trout throughout the watershed. The lower reaches also support mountain whitefish, brown and rainbow trout. Bull trout have been observed in this watershed infrequently. Only one redd has been observed in the West Branch. Juvenile bull trout have been observed in both the West and East Branches indicating some level of reproductive success.

Approximately 38.2 miles of fish bearing streams would be accessible to livestock including 12.9 miles of designated bull trout critical habitat.

The adaptive management strategy and additional monitoring would not be implemented. Monitoring has the dual purpose of ensuring compliance with the design features and proper use criteria for an allotment and determining whether the current management of the allotment is maintaining or moving the area toward functioning condition. Implementation and focused effectiveness monitoring are critical to determine when or if management changes should be made.

- **Issue 2:** Water quality and stream health must be maintained and/or enhanced to comply with the Inland Native Fish Strategy (INFISH) habitat guidelines, Washington Department of Ecology water quality standards, and the Endangered Species Act.

There are no developed water sources within this allotment, so cattle are required to water at streams and undeveloped springs. This lack of off-stream water causes cattle to concentrate in riparian areas, which is exacerbated later in the grazing season as upland forage cures and becomes less palatable. This may lead to impacts to stream banks and riparian/wetland soils.

Despite the existing fencing on the allotment that was intended to discourage cattle drift, there are areas on the allotment where cattle drift is a recurring problem. Lack of natural barriers and timber harvest activities on private lands within and adjacent to the allotment and pasture boundaries also contribute to the drift problem, which makes keeping the cattle in the prescribed pasture during the prescribed season of use difficult at times.

Under Alternative A, no new improvements would be installed, with the exception of a riparian enclosure on the lower Middle Branch LeClerc Creek that was planned and approved prior to this project. This enclosure would help reduce and possibly eliminate cattle impacts to stream reaches on Lower Middle Branch LeClerc Creek. Reduction in impacts to streams would not likely occur since troughs would not be developed to

encourage cattle away from the streams and there would not be any additional hardened stream crossings for cattle to protect stream channels.

This alternative is anticipated to continue to affect the fish population of LeClerc Creek primarily through the contribution of sediment. High instream sediment levels causes embeddedness of the spawning and rearing and overwintering habitat in this watershed. The condition of the riparian habitat along much of the Middle Branch LeClerc Creek is insufficient to filter soil movement or provide adequate overhead shading and large instream wood recruitment.

Alternative B No Action (No Grazing)

Under this alternative, livestock grazing would be discontinued on the LeClerc Creek Allotment and the allotment would be closed. Additionally, no range improvements or resource protection projects would be implemented. Current Forest-wide programs such as noxious weed management and road maintenance would continue. Range improvements including fences, water systems, and corrals would remain on the allotment but would no longer be the responsibility of the permittee to maintain. Existing range improvements would be removed as needed pending available funding and project requirements. It is the desire of the Forest Service to have all range improvements removed within a 10-year time frame but this is subject to change.

Direct and Indirect Effects

- **Issue 1:** Restoration of both channel and riparian habitat is needed to provide for the recovery of bull trout, a listed species and the continued sustainability of the Westslope cutthroat trout, a sensitive species.

Cattle grazing in riparian areas may adversely impact riparian species and future wood recruitment (Platt 1991). Stream banks in grazing enclosures were, for the most part, more highly vegetated, possessed greater overhead canopy than unfenced stream banks where grazing was allowed. Both plant richness and species diversity were much greater on stream banks that were protected from grazing. The various expressions of vegetation abundance: abundance, overstory cover, species richness and species diversity, were richer for the most part on protected stream banks (Bayley and Li 2008). Alternative B would remove cattle from riparian areas; therefore they would improve for future sources of large woody debris numbers in the analysis area

The loss of riparian vegetation can decrease instream wood, debris, shade, and streambank stability (Heike et al. 2008). Cattle may also cause the replacement of deep-rooted riparian (stable) species with riparian species with shallow roots (unstable) (Heike et al. 2008). Heavily impacted areas by cattle will take longer to recover but many of these areas are being excluded from the allotment (Middle Branch LeClerc Creek) so there would be a gradual recover over time.

Areas with high cattle impacts would be expected to improve as vegetation and bank stability recover. This recovery is also expected to result in deeper, narrower, and healthier stream channels. As stream channels recover, fish populations would be expected to also recover as spawning and rearing areas are less embedded and pool

quality improves. There would not be any miles of fish bearing streams or designated bull trout critical that would be accessible to livestock within the analysis area.

- **Issue 2:** Water quality and stream health must be maintained and/or enhanced to comply with the Inland Native Fish Strategy (INFISH) habitat guidelines, Washington Department of Ecology water quality standards, and the Endangered Species Act.

Riparian areas with excessive cattle use would be identified for stream restoration opportunities. Hardened crossing structures would be removed and stream channel restored to a natural condition which mimics the up and down stream conditions adjacent to the site. No new improvements would need to be installed. Areas with high cattle impacts would be expected to improve as vegetation and bank stability recover. This recovery is also expected to result in deeper, narrower, and healthier stream channels (Heike et al. 2008).

Riparian vegetation would improve to create more shade to the streams to reduce temperature and increase sources of woody debris to the channel which improves pool depth hiding cover.

Alternative C

The Proposed Action

This alternative would continue to authorize grazing within the project area with modification to the existing permit conditions to address management and resource concerns that currently exist within the allotment.

Implement Adaptive Management including a Monitoring Plan

The range specialist or range staff would coordinate collection of monitoring data. If monitoring indicates that standards for riparian or upland habitats, compliance, and utilization are not being met, adjustments in the way the allotment is managed would be initiated. These could include a change in the number of authorized cow/calf pairs, a change in the grazing season, a change in the dates of authorized use in a given pasture, new range improvements, (additional water development sites may be identified in the upland portions of the allotment to provide watering sites off streams) etc. Any sites where new range improvement projects are proposed for construction would have all applicable surveys completed and clearances issued.

Livestock Numbers

Initial stocking rates for the allotment would be 101 cow/calf pairs, and based on monitoring information collected through the adaptive management and monitoring plan, livestock numbers could be modified in the future if there is a demonstrated need based on monitoring results of forage utilization, impacts to riparian or other natural or cultural resources, etc.

Timing of Grazing

Change the turn-on date for the allotment from June 1 to June 15. This would provide an extra two weeks during late spring for grizzly bears, elk, deer, and other wildlife to utilize green forage resources in the absence of permitted livestock. As the adaptive management strategy is

implemented and monitoring information is analyzed and assessed, dates may be adjusted. However, turn-on date for permitted grazing would not occur prior to June 15th. The end of the normal use period would be extended from October 1 (current) to October 15. The permittee would retain their ability to request an extension to the grazing season beyond October 15. Any request to extend the grazing season would need to be submitted in writing and approved or denied by the Forest Service, as described in FSM 2200.

Allotment/Pasture Boundary Changes

Fourth of July Pasture – Remove this pasture and associated improvements from the allotment.

Presently it is not contiguous to the rest of the allotment, so any cattle trailed to the pasture overland would be outside of the allotment boundary. Recent heavy timber harvest on State lands adjacent to the pasture has opened up once dense stands of trees rendering existing movement controls such as cattle guards ineffective. Substantial investments in fencing and other infrastructure would be needed to prevent cattle movement off the pasture and consequently, off the allotment.

Lower Bunchgrass Pasture – Move the southeastern boundary of this pasture to the west side of the Middle Branch LeClerc Creek, effectively excluding approximately 2.3 miles of the creek from the allotment. Shift the southern boundary of the pasture to the north, effectively removing an additional 0.5-mile of creek and areas of deciduous scrub/shrub wetlands from the allotment. Move the western pasture boundary to the ridgeline east of the 1935-105 road; add the area between the old and new pasture boundaries to the Mineral Creek pasture. Block existing stock trails or other paths that cattle could use to drift outside the new allotment boundary with sections of fencing, slash piles or other means.

Dry Canyon Pasture – Connect this pasture to the rest of the allotment by adding the area between the West Branch LeClerc Road (County Road 3503) and the Lower Bunchgrass Pasture. Block existing stock trails or other paths that cattle could use to drift outside the new allotment boundary with sections of fencing, slash piles or other means.

Upper Bunchgrass and Mineral Creek Pastures – Move the northern boundary of these pastures from Molybdenite Ridge south to where the slope begins to flatten out. Most of the area that would be excluded is not receiving livestock use due to dense stands of timber, steep topography, and a lack of good forage. Block existing stock trails or other paths that cattle could use to drift outside the new allotment boundary with sections of fencing, slash piles or other means.

Range Improvements

The following improvements would be completed to better control and distribute livestock across the allotment, and reduce local impacts to riparian areas and other habitats.

Allotment Boundary Fencing – Install new boundary fencing as needed to address identified natural resource issues. To the extent feasible, incorporate cliffs, talus, rock outcrops, steep side-hills, and dense forest stands into new pasture/allotment boundaries. These features act as natural barriers to cattle movement. The intent would be to minimize yearly fence maintenance needs and reduce the risk of drift off the allotment.

Where continuous forest stands are used as a pasture/allotment “boundary,” survey the stands for any trails that cattle could potentially use to drift off the allotment. Take steps as needed

to effectively block these trails with sections of fencing, piled slash, felled “jackpots” of trees, or other means.

Pasture Fencing – Improve existing fence that crosses WB LeClerc Creek in T. 36 N., R. 44 E., sec. 8, NW1/4 NW1/4 to decrease drift between pastures.

Improve existing pasture fencing to bring it up to standard and act as an effective barrier to cattle drift (3 sections of fence in; T. 36 N., R. 44 E., sec. 4, SW1/4 and NW1/4; T. 36 N., R. 44 E., sec. 8, NE1/4; and T. 37 N., R. 44 E., sec. 33, SW1/4 and NW1/4)

Old Fencing – As funding becomes available, remove existing, old fence sections on changed allotment/pasture alignments. Remove the existing drift fence outside the allotment on the East Branch LeClerc Creek. This work could be accomplished with Forest Service employees or volunteers.

Cattle Guards

- Install a new cattle guard on FR 1935011 near the eastern edge of section 10 (T. 36 N., R. 44 E.). Construct fence segments from either side of the cattle guard to control points such as dense timber or rock outcrops. This action is necessary to prevent cattle from using the road to move off the allotment.
- Move the existing cattle guard on the Middle Branch LeClerc Road (FR 1935) north to the new allotment boundary in T. 36 N., R. 44 E., section 20, SE ¼. Tie the structure in to the new allotment boundary fencing.
- Install two new cattle guards on the Middle Branch LeClerc Road where the road crosses through a section of private property in T. 36 N., R. 44 E., section 21, NW ¼. Tie these structures in to new pasture fencing along the section boundaries
- Install a new cattle guard in the Paupac Road (FR 1936) in the Coyote Hill area. Construct fence segments from either side of the cattle guard to control points, as needed. This action is necessary to prevent cattle drift on this road and off the allotment.

Water Development – Provide off stream watering opportunities by developing four water troughs in the Lower Bunchgrass pasture where there are small springs or other water sources. Approximate locations are:

T. 36 N., R. 44 E., sec. 8, NW ¼ SW ¼

T. 36 N., R. 44 E., sec. 10, NW ¼ SW ¼

T. 36 N., R. 44 E., sec. 16, NW ¼ SE ¼

T. 36 N., R. 44 E., sec. 20, SE ¼ NW ¼

Hardened crossings identified in the proposed action would serve as watering sites as well.

Exclosure Fencing – install fencing to protect sensitive plants (T. 36 N., R. 44 E., sec. 20 NW/SE)

New Access Route to Hanlon Meadow

This meadow is located in the Lower Bunchgrass Pasture in T. 36 N., R. 44 E., sections 20 and 29. The meadow contains a livestock holding pen and corral, which the permittee uses to release and gather up cows.

An approximately 800-foot long section of the old Middle Branch LeClerc road presently provides road access to the meadow. This road segment impinges on a scrub/shrub wetland on the Middle Branch LeClerc Creek. For this reason, the road segment would be obliterated to restore the hydrologic integrity of the wetland. A new access route to the meadow would be provided via FR 1935116. A short spur road (approximately 600 feet) would be built from FR 1935116 to the meadow on an old, existing road template. The gate that is presently on the entrance of FR 1935116 would then be moved approximately 200 feet up the road, in order to maintain open road access to the meadow and holding pen.

Harden/Improve Stream Crossings

Harden the stream crossing inside the holding pen and add exclosure fencing.

Improve two existing hardened crossings

T. 36 N., R. 44 E., sec. 20, SE $\frac{1}{4}$ SE $\frac{1}{4}$

T. 37 N., R. 44 E., sec. 32, SE $\frac{1}{4}$ SW $\frac{1}{4}$

Develop one new hardened crossing. Approximate location:

T. 37 N., R. 44 E., sec. 33, SW $\frac{1}{4}$ SW $\frac{1}{4}$

Establish a deferred rotation grazing strategy

Deferred rotation means that one portion of the allotment is grazed early season, thereby deferring grazing on the remainder of the allotment and allowing for plant growth and seed production to occur. This strategy helps to maintain plant health and vigor as well as species diversity. The allotment would feature 4 pastures - Lower Bunchgrass, Upper Bunchgrass, Mineral Creek, and Dry Canyon.

Expand/improve the Diamond City corrals to aid in loading and unloading cattle, and provide a catch pen

Expand the catch pen fences to make the catch pens larger if needed, provide a loading chute for getting cattle onto and off of stock trucks (T. 36 N., R. 44 E., sec. 18, SW $\frac{1}{4}$, SE $\frac{1}{4}$.)

Utilize existing vegetation to reduce drift potential between Mineral Creek and Lower Bunchgrass Pastures.

There are currently areas where cattle are able to drift between pastures in T. 36 N., R 44 E., section 8. Existing vegetation would be used to deter cattle drift and create a more effective barrier. Methods utilized may include directional falling, brush barriers, placement of root wads or others.

Monitoring

Establish three riparian Designated Monitoring Areas (DMAs) to implement Multiple Indicator Monitoring (MIM) monitoring protocols at existing monitoring sites.

- An additional riparian DMA in the Dry Canyon pasture may be established as monitoring of resource conditions necessitates.

Potential Adaptive Management Actions based on Monitoring Results

Water Developments - Additional water development sites may be identified in the upland portions of the allotment to provide watering sites off streams. Before development of these sites, effects to natural/cultural resources would be assessed. Approximate locations of potential sites include:

T. 36 N., R. 44 E., sec. 5, SE1/4 SE1/4

T. 36 N., R. 44 E., sec. 7, NE1/4 SE1/4

T. 36 N., R. 44 E., sec. 18, NE1/4 NE1/4

T. 37 N., R. 44 E., sec. 27, NW1/4 SE1/4

T. 37 N., R. 44 E., sec. 30, SW1/4 NE1/4

Cattle Guards- Assess the need for a new cattle guard on the Middle Branch LeClerc Road (FR 1935) southwest of Bunchgrass Meadows. If cattle drift is documented, install a cattle guard and wing fencing on the road at the most appropriate location to block cattle drift.

Roads

This project proposes to obliterate an approximately 800-foot long section of the old Middle Branch LeClerc Road, and reconstruct approximately 600 feet of an old, existing road template changing the access to Hanlon Meadow and the holding pen.

Exclosures

Exclosures are fenced areas where livestock are not permitted to enter. They typically protect sensitive resources like springs, marshes, and sensitive plant populations. They can be temporary, or permanent. Temporary exclosures may be constructed from brush or cut trees generated by meadow retention, or by electric fence. Permanent exclosures are typically constructed with wire or post and pole fencing. Responsibility for fence maintenance varies with fence location.

A new fence at Hanlon Meadow near the holding pen would exclude livestock use from a portion of the creek that is lacking multiple age classes of woody riparian vegetation. Riparian habitat and water quality would likely improve as a result of constructing an exclosure

Direct and Indirect Effects

The concentration of cattle on the riparian area along Lower Middle Branch LeClerc Creek is expected to decrease substantially with the proposed change in the allotment boundary and additional fencing in section 21 of T. 36 R. 44 connecting the two segments of POPUD fence (installed 2012) located along the northwest riparian edge of Middle Branch LeClerc Creek. These areas are expected to be monitored and adaptive management applied to reduce impacts where determined necessary. Incorporating adaptive management practices would allow changes to occur as needed and as determined by ongoing monitoring of key locations which have been identified by the Interdisciplinary Team. Where monitoring indicates that standards for riparian compliance and utilization are not being met, adjustments in the way the allotment is managed would be initiated. Management actions could include a change in the number of authorized cow/calf pairs, a change in the grazing season, a change in the dates of

authorized use in a given pasture, or new range improvements such as fencing, brush/debris barriers, and/or water developments.

The proposed changes in management practices are expected to increase activity in the diamond city area as well as riparian areas along West Branch LeClerc Creek, Mineral Creek, and upper Whiteman Creek but these impacts should be localized reducing overall effects. Fencing of the meadow in the Hanlon pasture would reduce the 4 acres of wetlands that are currently impacted by cattle. An 800 foot section of road that is also currently affecting the wetland would be obliterated.

- **Issue 1:** Restoration of both channel and riparian habitat is needed to provide for the recovery of bull trout, a listed species and the continued sustainability of the Westslope cutthroat trout, a sensitive species.

Table 2 indicates the INFISH standards for LWD and pool frequency are currently not being met. Data from the PIBO Effectiveness Monitoring indicate the average percentage of pool habitat (37%) is near the average of other managed watersheds in the basin (40.9%) and reference conditions (43.3%) (Table 4). Past disturbances, both natural and human-caused, have altered the channel equilibrium. Localized areas where cattle have access to riparian areas may be degraded and adversely impact baseline conditions. These areas would be monitored and adaptive management tools would be applied as necessary. Areas where there would be allotment improvements to move cattle away from streams would improve baseline conditions. Due to the presence of juvenile bull trout in the analysis area, there is the potential for loss of bull trout eggs, alevins, and fry from direct trampling of redds. Indirect effects of sedimentation and temperature increase from shade loss may result in stress that causes mortality. Continued grazing in riparian areas may increase sediment input to streams. Livestock can alter stream shape (pattern, dimension, and profile) and are therefore an indirect influence on temperature if large areas of stream are disturbed. However due to the low numbers (1-50 adults) present in the entire Lake Pend Oreille core area; the risk of this happening is low.

Existing stream and riparian habitat conditions are expected to show improvement under this alternative due to the proposed range improvements (fencing, boundary changes, and water developments that move cattle away from riparian areas and streams. Alternative C would have 24.8 miles of fish bearing streams accessible to livestock including 11.2 miles of designated bull trout critical habitat. This is a reduction from the current condition of 8 miles of fish bearing stream and 1.7 miles of critical habitat. Fish populations would also be expected to increase as habitat conditions improve. Juvenile bull trout have been observed in both the West and East Branches indicating some level of reproductive success. Westslope cutthroat populations are more populous in the higher gradient stream segments. The trend of these subpopulations is unclear.

- **Issue 2:** Water quality and stream health must be maintained and/or enhanced to comply with the Inland Native Fish Strategy (INFISH) habitat guidelines, Washington Department of Ecology water quality standards, and the Endangered Species Act.

The effects of range improvements to the fish habitat condition in the West and East LeClerc Creek subwatersheds are expected to be beneficial by reducing drift between pastures and off the allotment, reducing the use in localized riparian areas and wetland meadows, and drawing cattle away from the main stream channels by developing trough sites in upland areas. Two additional hardened crossing sites have been identified for improvement or reconstruction which is expected to decrease the amount of direct impact to stream channels. With the implementation of all these improvements, it is expected adverse effects would be mitigated over much of the analysis area.

The decrease in access by cattle to riparian areas may improve pool numbers and quality in localized, previously heavily used areas. Fencing of riparian areas would also reduce trampling, compacting and sloughing off of the streambanks in the analysis area. Increases in Riparian vegetation may lead to decreased width to depth ratios and increased shade to streams. Heavily impacted areas by cattle would take longer to recover but many of these areas are being excluded from the allotment (Middle Branch LeClerc Creek) so there would be a gradual recover over time.

Allotment improvements would move cattle away from riparian areas and help prevent drift through allotment and pasture boundary changes, new fencing, new cattle guards, water developments, and improved stream crossings. Alternative C allows for adaptive management for any future resource concerns that may arise. This may include reducing the number of cattle and/or the time on the allotment, additional water troughs to move cattle from streams or fencing to exclude them from riparian areas. Monitoring and implementation of the adaptive management plan should avoid any negative effects to riparian or aquatic habitats that would carry over in any meaningful way to the following grazing season.

Alternative D

Modification of Alternative C

This alternative would continue to authorize grazing within the project area with modification to the existing permit conditions to address management and resource concerns that currently exist within the allotment. This alternative was proposed by the current allotment permittee and incorporates all of the elements of alternative C, but with modifications to make it operationally workable “on the ground”.

This alternative would be a modification of Alternative C and includes operational function brought forward by the permittee (proposed action). Alternative D would incorporate all of the elements of Alternative C with the following changes:

Changes to the boundaries, administration, and management of the allotment would occur as follows.

- 1. Implement Adaptive Management including a Monitoring Plan** – The range specialist or range staff would coordinate collection of monitoring data. If monitoring indicates that

standards for riparian or upland habitats, compliance, and utilization are not being met or a threshold is exceeded, adjustments in the way the allotment is managed would be initiated. These could include a change in the number of authorized cow/calf pairs, a change in the grazing season, a change in the dates of authorized use in a given pasture, new range improvements, etc. Any sites where new range improvement projects are proposed for construction would have all applicable surveys completed and clearances issued.

2. Livestock Numbers – Initial stocking rates for the allotment would be 101 cow/calf pairs, and based on monitoring information collected through the adaptive management and monitoring plan, livestock numbers could be modified in the future if there is a demonstrated need based on monitoring results of forage utilization, impacts to riparian or other natural or cultural resources, etc.

3. Timing of Grazing – Change the turn-on date for the allotment from June 1 to June 15. This would provide an extra two weeks during late spring for grizzly bears, elk, deer, and other wildlife to utilize green forage resources in the absence of permitted livestock. As the adaptive management strategy is implemented and monitoring information is analyzed and assessed, dates may be adjusted. However, turn-on date for permitted grazing would not occur prior to June 15th. The end of the normal use period would be extended from October 1 (current) to October 15. The permittee would retain their ability to request an extension to the grazing season beyond October 15. Any request to extend the grazing season would need to be submitted in writing and approved or denied by the Forest Service, as described in FSM 2200.

4. Allotment/Pasture Boundary Changes

- The Hanlon Meadow that is currently not identified within the proposed action would be identified as a pasture within the allotment and would be monitored to standards. Once grazing standards have been reached, all cattle would be removed from Hanlon Meadow and the gates would remain closed. The need to use the Hanlon Meadow Pasture after grazing standards were met would be approved on a case by case basis by the line officer (i.e. short term holding for an injured cow).

There is basically no change from existing condition to use the holding pen as it is being used now, just stated more clearly and identified as a pasture.

- The proposed fence around the NW corner of T36N R44E S21 would be dropped.
- The SE allotment/pasture boundary would be adjusted from the Middle Branch LeClerc Creek to the existing fence along the East Branch road (FR 1934) as shown on the map. There would be a new fence constructed adjoining the existing fence along the East Branch Road North along the creek, outside of the RHCA management zone and would tie into topography or vegetation to help restrict cattle movement south around Section 13.
- Fencing would be constructed and/or natural barriers would be used on the east side of MB LeClerc Creek in T36N R44E S16 and S20 to exclude cattle from MB LeClerc Creek.

- The southern allotment boundary would be adjusted in T36N R44E S29 NE1/4 to include the shrub wetland south of the holding pen in the allotment. Part of this proposal is also to extend proposed fencing in section 20 south along the road to the bridge, then cross the stream and continue down the east side of MB LeClerc Creek and tie into existing fencing. Additionally, the proposed cattle guard at the north end of the holding pen in section 20 would be dropped and the existing cattle guard in section 29 would be left in place.

This change is being proposed so the existing PIBO DMA on the MB LeClerc Creek would remain inside the allotment and continue to provide data pertinent to cattle management and the effects of grazing. This DMA could be greatly helpful in determining the effects from any changes that get implemented since we have pre-project data collected that shows standards were not being exceeded.

- Construct new fence to tie 2 pieces of existing fence together creating an effective barrier to cattle drift in the NW ¼ of T36N R44E S20.
- Modify the northern allotment boundary to include an area of upper Paupac.
- Install two cattle guards with **Alt D** (one on 1936 and one on 1936010 sec 25).
- Construct a short drift fence across the 1933141 road to reduce cattle drift out of the Dry Canyon pasture onto private lands (this is a system road but is ML1ⁱ).
- Additional drift fence may be needed in T36N R44E S06 (exact location to be determined) to further eliminate drift to private lands.

5. Range Improvements – The following improvements would be completed to better control and distribute livestock across the allotment, and reduce local impacts to riparian areas and other habitats.

- Water Development – Provide off stream watering opportunities by developing four water troughs in the Lower Bunchgrass pasture where there are small springs or other water sources. Approximate locations are:
 - T36N, R44E, sec. 8, NW1/4 SW1/4
 - T36N, R44E, sec. 10, NW1/4 SW1/4
 - T36N, R44E, sec. 16, NW1/4 SE1/4
 - T36N, R44E, sec. 20, SE1/4 NW1/4
 - Hardened crossings identified in the proposed action would serve as watering sites as well.

2. Exclosure Fencing– install fencing to protect sensitive plants (T. 36 N., R. 44 E., sec. 20 NW/SE)

3. New Access Route to Hanlon Meadow

This meadow is located in the Lower Bunchgrass Pasture in T. 36 N., R. 44 E., sections 20 and 29. The meadow contains a livestock holding pen and corral, which the permittee uses to release and gather up cows.

An approximately 800-foot long section of the old Middle Branch LeClerc road presently provides road access to the meadow. This road segment impinges on a scrub/shrub wetland on the Middle Branch LeClerc Creek. For this reason, the road segment would be obliterated to restore the hydrologic integrity of the wetland. A new access route to the meadow would be provided via FR 1935116. A short spur road (approximately 600 feet) would be built from FR 1935116 to the meadow on an old, existing road template. The gate that is presently on the entrance of FR 1935116 would then be moved approximately 200 feet up the road, in order to maintain open road access to the meadow and holding pen.

4. Harden/Improve Stream Crossings

Harden the stream crossing inside the holding pen and add exclosure fencing.

Improve two existing hardened crossings

T36N, R44E, sec. 20, SE1/4 SE1/4

T37N, R44E, sec. 32, SE1/4 SW1/4

Develop 1 new hardened crossing. Approximate location:

T37N, R44E, sec. 33, SW1/4 SW1/4

5. Implement a Deferred Rotation Grazing Strategy.

Deferred rotation means that one portion of the allotment is grazed early season, thereby deferring grazing on the remainder of the allotment and allowing for plant growth and seed production to occur. This strategy helps to maintain plant health and vigor as well as species diversity. The allotment would feature 5 pastures- Lower Bunchgrass, Upper Bunchgrass, Mineral Creek, Hanlon Meadow and Dry Canyon.

6. Expand/Improve the Diamond City Corrals to Aid in Loading & Unloading Cattle & Provide a Catch Pen

Expand the catch pen fences to make the catch pens larger if needed, provide a loading chute for getting cattle onto and off of stock trucks (T. 36 N., R. 44 E., sec. 18, SW1/4, SE1/4.)

7. Utilize existing vegetation to reduce drift potential between Mineral Creek and Lower Bunchgrass Pastures.

There are currently areas where cattle are able to drift between pastures in T. 36 N.; R 44 E.; section 8. Existing vegetation would be used to deter cattle drift and create a more effective barrier. Methods utilized may include directional falling, brush barriers, placement of root wads or others.

Monitoring

Establish Three Riparian Designated Monitoring Areas (DMAs) to implement multiple indicators monitoring¹ (MIM) Monitoring Protocols at Existing Monitoring Sites

An additional riparian DMA in the Dry Canyon pasture may be established as monitoring of resource conditions necessitates.

Potential Adaptive Management Actions based on Monitoring Results

Water Developments - Additional water development sites may be identified in the upland portions of the allotment to provide watering sites off streams. Before development of these sites, effects to natural/cultural resources would be assessed. Approximate locations of potential sites include:

T36N, R44E, sec. 5, SE1/4 SE1/4

T36N, R44E, sec. 7, NE1/4 SE1/4

T36N, R44E, sec. 18, NE1/4 NE1/4

T37N, R44E, sec. 27, NW1/4 SE1/4

T37N, R44E, sec. 30, SW1/4 NE1/4

Direct and Indirect Effects

Proposed changes to the allotment and pasture boundaries in this alternative are expected to have an increase of effects within the East Branch LeClerc Creek subwatershed and Dry Canyon Catchment. The area of Lower Bunchgrass pasture would be approximately double the area proposed in Alternative C. Currently the Public Utility District No. 1 of Pend Oreille County is required to fence the north side of the bridge to the south end of the enclosure per the terms of the Federal Energy Regulatory Commission (FERC) license and agreement with Fisheries Subcommittee (FSC) parties for the lower Middle Branch LeClerc Creek Tributary Habitat Restoration Project (THRP). The FSC agreed to defer construction of this fence until the LeClerc Range NEPA decision was finalized. However if this element of Alternative D is selected, then the fence would not be constructed immediately, but monitoring at the PIBO site would continue for five years, then a determination on whether to construct the fence would be made.

About an 800' reach of Middle Branch LeClerc Creek would not be fenced in section 21 which is not in Forest Service ownership. There may be potential effects in this reach as it would be the only section of stream that is not fenced in the area. Of the approximately 3,000 acres being added to Lower Bunchgrass pasture in alternative D, about 2,000 acres are private ownership. Five tributaries to East Branch LeClerc Creek and additional 2000' of sensitive riparian reach of lower Middle Branch LeClerc Creek would be accessible to cattle. The majority of this 2000' reach is a wide flood plain with alder and willow shrub component, braided stream with tributaries. Fencing of the meadow in the Hanlon pasture would reduce the 4 acres of wetlands that are currently impacted by cattle. An 800 ft. section of road that is also currently affect the wetland would be obliterated.

- **Issue 1:** Restoration of both channel and riparian habitat is needed to provide for the recovery of bull trout, a listed species and the continued sustainability of the Westslope cutthroat trout, a sensitive species.

Although Table 2 indicates the INFISH standards for pool frequency are currently not being met., data from the PIBO Effectiveness Monitoring indicate the average percentage of pool habitat (37%) is near the average of other managed watersheds in the basin (40.9%) and reference conditions (43.3%) (Table 4). Past disturbances, both natural and human-caused, have altered the channel equilibrium. Localized areas where cattle have access to riparian areas may be degraded and adversely impact baseline conditions. These areas would be monitored and adaptive management tools would be applied as necessary. Areas where there would be allotment improvements to move cattle away from streams would improve baseline conditions. Due to the presence of juvenile bull trout in the analysis area, there is the potential for loss of bull trout eggs, alevins, and fry. Continued grazing in riparian areas may increase sediment input to streams. Livestock can alter stream shape (pattern, dimension, and profile) and are therefore an indirect influence on temperature if large areas of stream, are disturbed.

Existing stream and riparian habitat conditions are expected to show improvement under this alternative due to the proposed range improvements (fencing, boundary changes, and water developments that move cattle away from riparian areas and streams. Alternative D would have 27.5 miles of fish bearing streams accessible to livestock including 12.1 miles of designated bull trout critical habitat. This is a reduction from the current condition of 5.3 miles of fish bearing stream and 0.8 miles of critical habitat. Fish populations would continue to be represented primarily by eastern brook and Westslope cutthroat trout throughout the watershed. Juvenile bull trout have been observed in both the West and East Branches indicating some level of reproductive success. Westslope cutthroat populations are more populous in the higher gradient stream segments the trend of these subpopulations is unclear.

- **Issue 2:** Water quality and stream health must be maintained and/or enhanced to comply with the Inland Native Fish Strategy (INFISH) habitat guidelines, Washington Department of Ecology water quality standards, and the Endangered Species Act.

The effects of range improvements to the fish habitat condition in the West and East LeClerc Creek subwatersheds are expected to be beneficial by reducing drift between pastures and off the allotment, reducing the use in localized riparian areas and wetland meadows, and drawing cattle away from the main stream channels by developing 4 trough sites in upland areas. Two additional hardened crossing sites have been identified for improvement or reconstruction which is expected to decrease the amount of direct impacts to stream channels. With the implementation of all these improvements and the adaptive management strategy, it is expected adverse effects would be avoided or mitigated over much of the analysis area.

The decrease in access by cattle to riparian areas may improve pool frequency and quality in localized, previously heavily used areas. Fencing of riparian areas would also reduce trampling, compacting and sloughing off of the streambanks in the analysis area. Increases in riparian vegetation may lead to decreased width to depth ratios and increased

shade to streams. Heavily impacted areas by cattle would take longer to recover but many of these areas are being excluded from the allotment (except for the 800' reach of Middle Branch LeClerc Creek would not be fenced in section 21 which is not in Forest Service ownership) so there would be a gradual recovery over time.

Alternative D with adaptive management is designed to reduce impacts in riparian areas, specifically in areas that continue to be revisited by cattle drift. The allotment improvements would move cattle away from riparian areas and would have a long-term positive impact to stream temperatures in localized areas. This may include reducing the number of cattle and/or the time on the allotment, additional water troughs to move cattle from streams or fencing to exclude them from riparian areas. Monitoring and implementation the adaptive management plan should avoid any negative effects to riparian or aquatic habitats that would carry over in any meaningful way to the following grazing season.

Effects of Ongoing Actions in the Watershed

Livestock Grazing

USFWS 2002 says grazing is of particular concern where allotments are located along spawning and rearing streams. While severe site-specific problems may occur, livestock impacts are generally being reduced through better management practices on public and to a lesser extent, private lands. Livestock grazing does not represent a major threat to bull trout recovery in this recovery unit but where problems exist, they can be severe. (USFWS 2002, pg. 53) Grazing has impacted the Middle and East branches of LeClerc Creek and some of their tributaries where road access within the riparian areas exists, within meadows primarily along roads and transitory range created by past harvest activity (USFS data in project files). As a result, localized areas with livestock impacts can be found within the analysis area. However, as grazing management improves and with the implementation of range improvements, riparian conditions should improve and livestock impacts will be localized to relatively small areas.

Timber Harvest

Harvest on NFS lands during the 1980's were primarily stand replacement or overstory removal of mature timber trees (even age management). Stands of timber were clear cut, or left with a small percentage of mature trees for the purpose of natural regeneration (seed tree and shelterwood silvicultural prescriptions). Most of the harvest areas were planted soon afterwards. This was eventually followed by noncommercial thinning, in these areas, of any overstocked young stands between 13 and 20 years of age. A majority of the existing riparian vegetation along perennial streams was managed under the designation of stream management units during the time period when even age management was the primary silvicultural treatment.

Shelterwood harvest and commercial thinning (uneven age harvest) have been the predominant mode of timber removal from the 1990's to the present. Timber volume being equal, this method removes timber over a greater acreage than previous even age silvicultural prescriptions. From 1995 to the present, RHCA's have been established through Forest Plan direction. Since this time, much of riparian vegetation in the analysis area has been undisturbed by timber harvest.

Past timber harvesting has resulted in changes in forest cover and hydrology. Timber harvest can increase total water yield, increase peak flows and decrease summer low flows. Timber harvest in riparian areas may also increase water temperature through the removal of overhead riparian canopy and change in summer flows. However, as young trees mature and forest cover increases, any effects from past harvest are expected to decline. All even age harvest areas on NFS lands in the analysis area are in some stage of transitioning into fully functioning timber stands.

Recreation

This analysis area contains dispersed recreation campsites. Most of the camping use occurs along West Branch LeClerc Creek, in a former developed recreational area. These recreation sites usually consist of small areas cleared of woody vegetation within the RHCAs and do not have any foreseeable cumulative effects on fisheries.

Fire

Fire has always played an important role in the disturbance regime of the LeClerc watershed. NFS lands have experienced several stand replacement fires. Large fires burned in the analysis area in the late 1920s and early 1930s. This has resulted in the densely stocked stands of small diameter trees currently seen on the landscape. However, since large fires have not recently occurred in the analysis area and current forest canopies are dense (where even age timber harvest has not recently occurred). The Hanlon project implemented in 2010 reduced fuel loads in the project area. The effect of fire on the present flow regime and background erosion appears to be minor.

Transportation

Forest and county road systems can adversely affect streams by increasing sediment loads, changing runoff rates, and altering stream channel morphology. Incorrectly installed or undersized culverts may be fish passage barriers that prevent upstream fish passage, which limits the amount of available, suitable fish habitat. Undersized culverts can affect the stream's ability to convey water and sediment, and represent an increased risk of failure and subsequent erosion and deposition of sediment into stream channels. Culverts directly interact with channels and can affect channel morphology and channel migration patterns, and local hydraulics that may influence the stream channel.

CUMULATIVE EFFECTS of ALTERNATIVES C AND D

Cumulative effects are spatially bounded by the existing allotment boundary. The effects of grazing and livestock could be present throughout the allotment boundary but are most realized in riparian and wetland areas.

Cumulative effects are temporally bounded to the time frame within 5-10 years of implementation, which should encompass the maximum temporal extent of any potential effects.

Present and reasonably foreseeable future actions in the West and East Branch LeClerc Creek subwatersheds include the Hanlon Vegetation Management project, Box Canyon dam relicensing stream habitat restoration projects, replacement of at least seven fish passage barrier culverts , Rerouting West Branch LeClerc Creek reach to its historic channel, relocate approximately 1.8 miles of NFS 1935-000 road, a segment that has high sediment delivery to the West Branch LeClerc stream system, and removing legacy crib dams.

Continued grazing in riparian areas without range improvements and adaptive management may increase sediment input to streams and temperatures in areas that cattle can access riparian areas. Allotment improvements such as fencing, cattle guards and the addition of off channel watering sources would move cattle away from riparian areas for gradual improvement in the baseline condition over time.

Federal and private roads and culverts constructed at road/stream crossings in the planning area have affected streams and riparian areas. Past management activities in the planning area that affect baseline water quality, riparian, and aquatic habitat to varying degrees include road construction and maintenance, wildfire and prescribed fire, timber harvest, grazing, mining, and dispersed recreation. Forest and county road systems can adversely affect streams by increasing sediment loads, changing runoff rates, and altering stream channel morphology. Incorrectly installed or undersized culverts may be fish passage barriers that prevent upstream fish passage, which limits the amount of available, suitable fish habitat. Undersized culverts can affect the stream's ability to convey water and sediment, and represent an increased risk of failure and subsequent erosion and deposition of sediment into stream channels. Culverts directly interact with channels and can affect channel morphology and channel migration patterns, and local hydraulics that may influence the stream channel.

Continued grazing in riparian areas and cattle trailing along streams within grazing allotments will likely continue to contribute elevated sediment levels to streams in the watershed; although, adaptive management provisions in allotment management plans should be implemented where necessary to reduce livestock impacts. In the absence of other reductions to sediment delivery in the watershed, streams in several of the watersheds where treatment is planned would continue to receive sediment from anthropogenic sources.

Foreseeable timber harvest and prescribed fire activities in the analysis area on National Forest System land are not likely to substantially affect water quality, RHCAs or fisheries due to use of buffers and strict adherence to forestry BMPs. Timber-sale road improvements included in the project design would be expected to reduce sediment delivery from project-area roads through implementation of road best management practices (BMPs.) The impacts of roads on water quality would not be altered as a direct result.

The types of future non-federal activities that can result in cumulative effects include, but are not limited to, new proposals for residential subdivision, timber harvest and log hauling, operation and maintenance of irrigation dams and diversions, livestock grazing, gravel or other small-scale mining, highway construction, construction or maintenance of utility corridors, crop production, pesticide application, and road and highway maintenance.

Forest Plan Consistency

Implementation of Alternative A would not be consistent with the Forest Plan as amended with INFISH as it would not maintain RMOs and may cause a downward trend to stream habitat conditions as there would be no allotment improvements or adaptive management strategy. Implementation of Alternative B would be consistent with the Forest Plan as there would not be grazing impacts to stream habitats or riparian areas. Restoration projects and natural recovery of stream habitats would occur that would trend toward improvement of INFISH RMOs.

Alternatives C and D would be consistent with the Forest Plan as there would be improvements to the allotments that would move cattle away from riparian areas. These improvements used together with monitoring and adaptive management would maintain or improve RMOs and allow for long term positive trends in habitat conditions and corresponding positive trends in fish populations.

Determination and Summary

	Determination of Effects	Potential for Incidental Take?
Bull Trout	NLAA	Yes
Bull Trout Critical Habitat	LAA	

NE = No Effect

NLAA = May Affect - Not Likely to Adversely Affect

LAA = May Affect - Likely to Adversely Affect

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ⁱ ML 1 are closed roads or restricted access to the public.

Appendix 1 PIBO Results for the Subbasin

	type	N	index	sd	se	ci	type2	measure
1	1	11	0.85	0.20	0.06	0.11	Managed	O.E
2	2	<3	1.00	1.00	1.00	1.00	Reference Subbasin	O.E
21	3	25	0.92	0.15	0.03	0.05	Reference Eco Region	O.E
3	4	130	0.86	0.21	0.02	0.03	Reference All	O.E
17	1	13	37.82	21.97	6.09	10.86	Managed	Final
28	2	<3	1.00	1.00	1.00	1.00	Reference Subbasin	Final
217	3	34	51.10	18.37	3.15	5.33	Reference Eco Region	Final
37	4	215	52.15	17.13	1.17	1.93	Reference All	Final
16	1	14	5.83	3.20	0.86	1.51	Managed	Bank.Angle
27	2	<3	1.00	1.00	1.00	1.00	Reference Subbasin	Bank.Angle
216	3	35	5.89	2.38	0.40	0.68	Reference Eco Region	Bank.Angle
36	4	217	5.46	2.66	0.18	0.30	Reference All	Bank.Angle
15	1	14	7.16	2.02	0.54	0.95	Managed	Wood.Frequency
26	2	<3	1.00	1.00	1.00	1.00	Reference Subbasin	Wood.Frequency
215	3	35	5.93	2.98	0.50	0.85	Reference Eco Region	Wood.Frequency
35	4	217	6.45	2.41	0.16	0.27	Reference All	Wood.Frequency
14	1	14	2.53	2.19	0.59	1.04	Managed	Pool.Fines
25	2	<3	1.00	1.00	1.00	1.00	Reference Subbasin	Pool.Fines
214	3	34	5.18	2.44	0.42	0.71	Reference Eco Region	Pool.Fines
34	4	215	5.58	2.55	0.17	0.29	Reference All	Pool.Fines
13	1	14	3.01	2.93	0.78	1.39	Managed	D50
24	2	<3	1.00	1.00	1.00	1.00	Reference Subbasin	D50
213	3	35	5.78	2.09	0.35	0.60	Reference Eco Region	D50
33	4	217	5.70	2.56	0.17	0.29	Reference All	D50
12	1	14	3.50	2.21	0.59	1.05	Managed	Pool.Percent
23	2	<3	1.00	1.00	1.00	1.00	Reference Subbasin	Pool.Percent
212	3	35	4.57	2.83	0.48	0.81	Reference Eco Region	Pool.Percent
32	4	217	4.75	2.67	0.18	0.30	Reference All	Pool.Percent
11	1	14	4.28	2.54	0.68	1.20	Managed	Residual.Pool.Depth
22	2	<3	1.00	1.00	1.00	1.00	Reference Subbasin	Residual.Pool.Depth
211	3	35	5.09	2.98	0.50	0.85	Reference Eco Region	Residual.Pool.Depth

31	4	217	5.30	2.54	0.17	0.28	Reference All	Residual.Pool.Depth
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